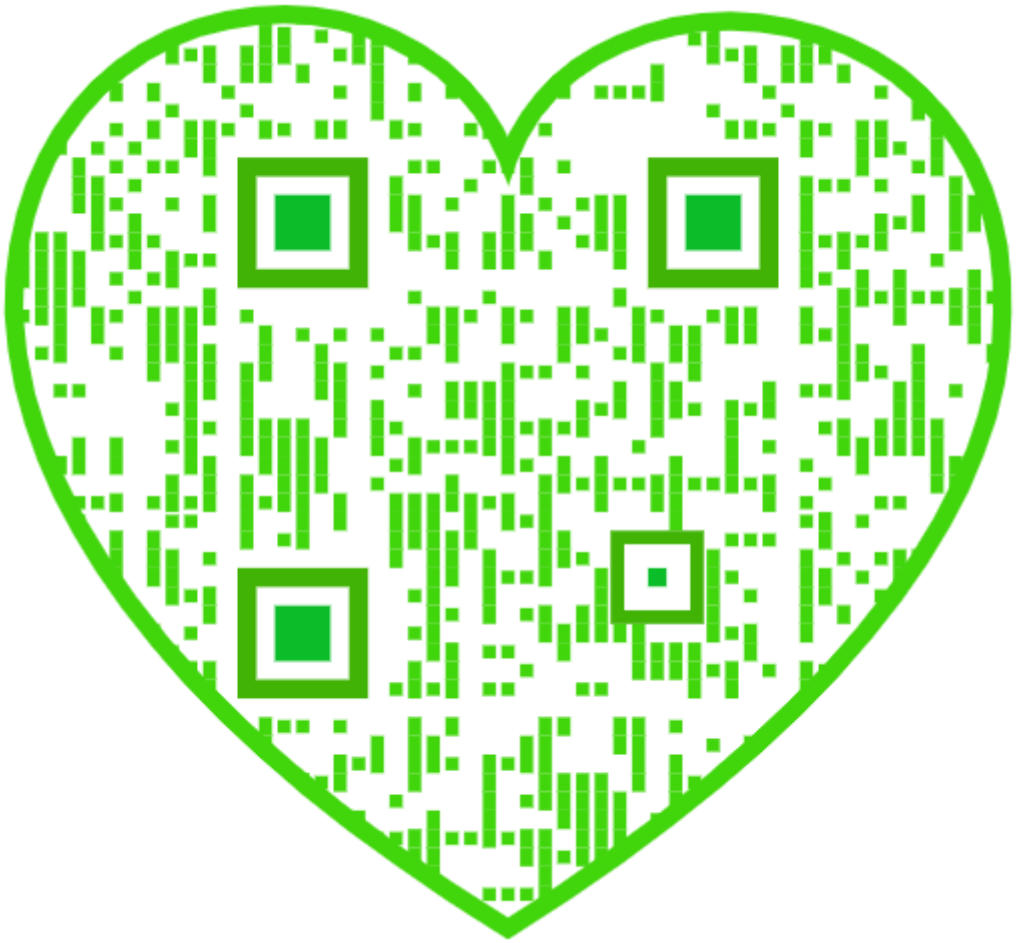
THE
UNITED STATES ARMY
MARKSMANSHIP UNIT

INTERNATIONAL RIFLE MARKSMANSHIP GUIDE



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FOREWORD

The purpose of this manual is to record the principles and techniques of International Rifle shooting with the primary objective of improving the shooters performance in competition. The techniques and ideas put forth in this manual represent the collective thinking of the United States medal winners of the last World Championships, Pan American and Olympic Games. These techniques and ideas are not to be taken as the final word or solution to success in international shooting but rather the best information presently available to guide the development of the international rifle shooter. Every shooter is an individual, differing from his fellow marksmen physically, mentally and in shooting background; thus, success in international rifle shooting is the direct result of the individual's ability to modify a standard training program to meet his own requirements.

A shooters progress in International Rifle shooting is directly proportional to his desire to achieve and his ability to clearly analyze his performance. This manual is designed to help the shooter with his analysis. For simplicity, the text is written in a manner that pertains to right handed shooters.

The validity of the material presented herein is attested to by the results attained in recent years and at present. United States Army International Rifle Teams and individual shooters, using the techniques described in these pages have continued to win in world competition. The effectiveness of training methods is measured by the success in competition.

This manual is dedicated to the shooter who is seriously interested in attaining maximum control of his developed skill in the art of International Rifle competitive marksmanship.

Sidney R. Hinds Jr

SIDNEY R. HINDS, JR.
Colonel, Infantry
Commanding

Figure 1. Olympic Gold Medal.

Figure 2. International Distinguished Badge.

CHAPTER I

THE INTERNATIONAL MATCH

A. GENERAL. The two medals in Figures 1 and 2 have one thing in common, both are awarded only to the finest shooters in the world. The International Distinguished Award is the highest award this nation can bestow upon a marksman. This medal is awarded to a shooter when he receives his first medal in international world competition. The Olympic Gold Medal is awarded of course to the world champion at the Olympics.

World Medals are given in only four competitions:

1. The Olympic Games are the most difficult competitions in which to win a medal. Only individual medals are given, i. e., only one gold, silver, and bronze per event. Also the U. S. team is composed of only four individuals selected at a tryout, normally run concurrently with the National International Championships. Only two shooters compete in each event from each nation.

2. The Pan American Games, unlike the Olympics are open only to nations in North, South, and Central America. Four man team awards are also presented, and for this reason normally eight shooters are selected for this competition. Although four shooters fire in each event, only two can shoot for the individual medal and they are selected prior to firing.

3. The World Championships, open to all nations, includes all six international events. Normally four 300 meter and four 50 meter shooters are selected with one alternate. All shooters are eligible to win both an individual and a team medal. Each of the above events are held once every four years are so spaced that two do not fall on the same year.

4. The European Championships are open to all nations of Europe and basically everyone who is excluded from the Pan American Games. Normally fired semi-annually, this competition is conducted exactly like the World Championships.

B. MAJOR DIFFERENCES BETWEEN ISU AND NRA TYPE MATCHES.

1. Time: National Rifle Association matches require the competitor to shoot his positions in a limited amount of time. International Shooting Union matches allow a longer period of time for the shooter to work and concentrate on his performance. There is no need to hurry the shot.

2. Targets: The target black of the ISU and NRA targets are almost identical. However, the scoring rings on the ISU target are considerably smaller than those on the NRA target. Thus, the ISU target is more demanding upon the shooters. It is a more discriminating measure of performance than the NRA target.

3. Firing Points: In ISU matches, firing points are usually covered and enclosed on three sides. The purpose of this is to protect the shooters from the elements (Figure 3). Also, all shooters are equally protected, this is not always true in NRA matches when trees or buildings behind an open firing line protect some shooters from wind, while other shooters go unprotected.

C. HOW AN INTERNATIONAL MATCH IS CONDUCTED.

1. Sighting shots are made at specified targets. They must be made before or between 10-shot strings for match score. In other words, once a shooter begins shooting for match score, he must complete a 10-shot string in that position before he can return to a sighter target in that position.

2. Before the match begins, each competitor's targets are clearly marked by position and numbered. It is the shooter's responsibility to see that he fires on the correct target.

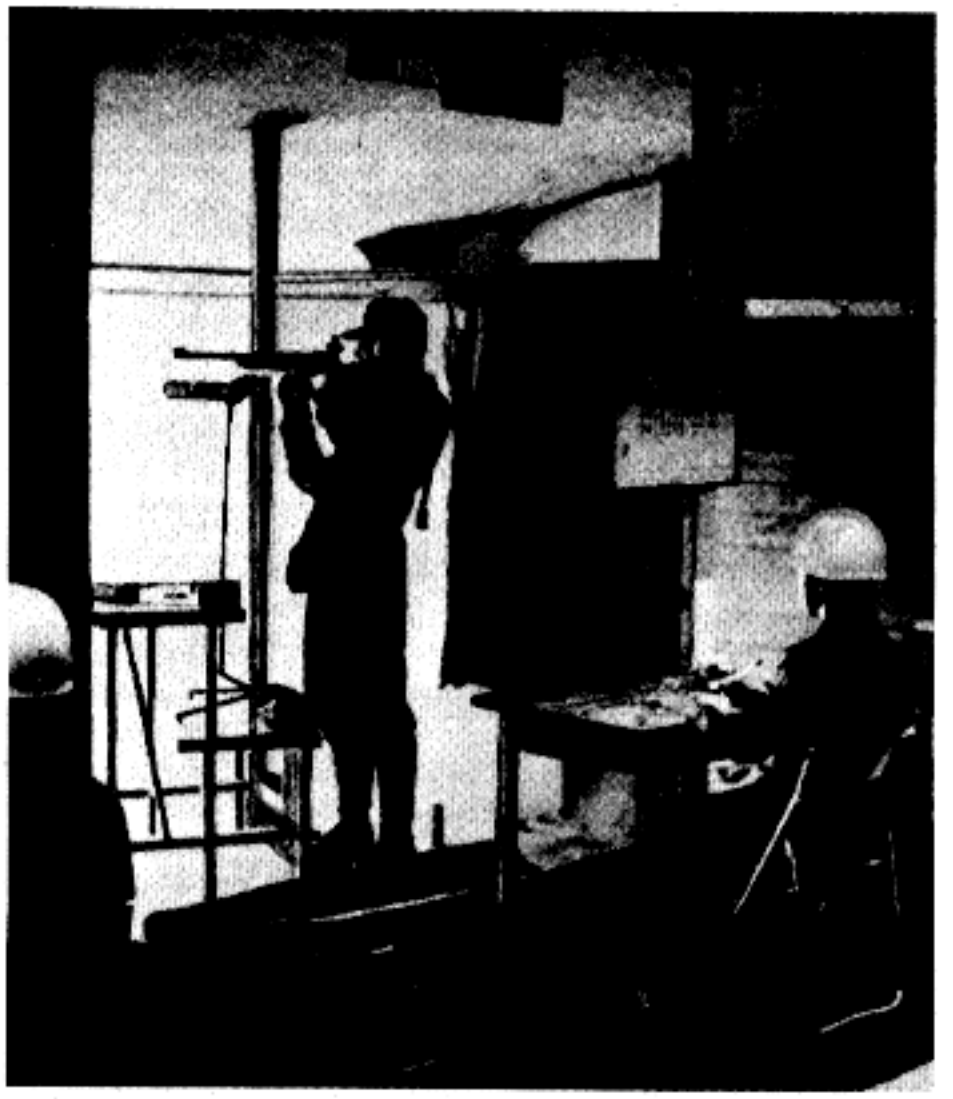


Figure 3. International Rifle Range.

3. In world championship smallbore competition, only one shot is fired at each target. Thus the changing of targets requires the firer to proceed to a much slower pace than is the custom in NRA matches. In 300 meter matches, 10 shots are usually fired at each target. The sequence of the match is prone, standing and kneeling.

4. Scorekeeper:

a. Behind each competitor is a registrar or scorekeeper (Figure 3). He is responsible to:

(1) Signal the pit detail to change targets,

(2) Insure that the competitor does not fire more than the legal number of match or sighting shots.

(3) Record the value (as best he can) of each shot on a scoreboard for the benefit of spectators. His record of the number of shots fired is official. His record of the value of each shot fired is unofficial. The register keeper's record should be preserved, however, as it may be referred to by the Jury of Appeals in reviewing targets .

b. The position of Register Keeper is highly valued in European countries, where spectator interest in shooting events run very high. Regulation ISU ranges have large areas reserved for spectators. During a match, the area behind a leading shooter is usually completely filled with spectators equipped with binoculars. Spectators are traditionally very courteous and sympathetic toward the shooters.

5. Awards Ceremony: A traditional ceremony attends the completion of every ISU event. The first three place winners mount a 3-tier pedestal and are presented with gold, silver, and bronze medals, for first, second, and third place (Figures 4 and 5). Then the first place winner is honored by the playing of his national anthem and the raising of his national flag. The completion of this ceremony marks the official close of the match.

D. COURSES OF FIRE. There are six types of International Shooting Union matches of interest to the international shooter. They are as follows:

1. English Match (50 Meters). The competitor fires a maximum of 15 sighting shots and 60 shots for match score from the prone position. The time limit for this match is 2 hrs 30 min. More shooters throughout the world compete in this event than any other single international event.

2. Smallbore Three-Position (50 Meters). The competitor fires a maximum of 10 sighting shots and 40 shots for match score in each position (prone, standing, and kneeling). The time limits are: 1 hr 30 min prone; 2 hrs standing; 1 hr 45 min kneeling.

3. Free Rifle (300 Meters). The competitor fires a maximum of 10 sighting shots and 40 shots for match score in each position (prone, standing, and kneeling). The time limits are: 1 hr 30 min prone; 2 hrs standing; 1 hr 45 min kneeling.

4. Smallbore Standard Rifle (50 Meters). The competitor fires a maximum of six sighting shots and 20 shots for match score in each position (prone, standing, and kneeling). The total time is 2 hrs 30 min.

5. Full Bore Standard Rifle (300 Meters). The competitor fires a maximum of six sighting shots and 20 shots for match score in each position (prone, standing, and kneeling). The total time is 2 hrs 30 min.

6. Air Rifle (10 Meters). The competitor fires a maximum of 10 sighting shots and 40 shots for match score from the standing position. Currently this event is fired only in the World and European Championships.

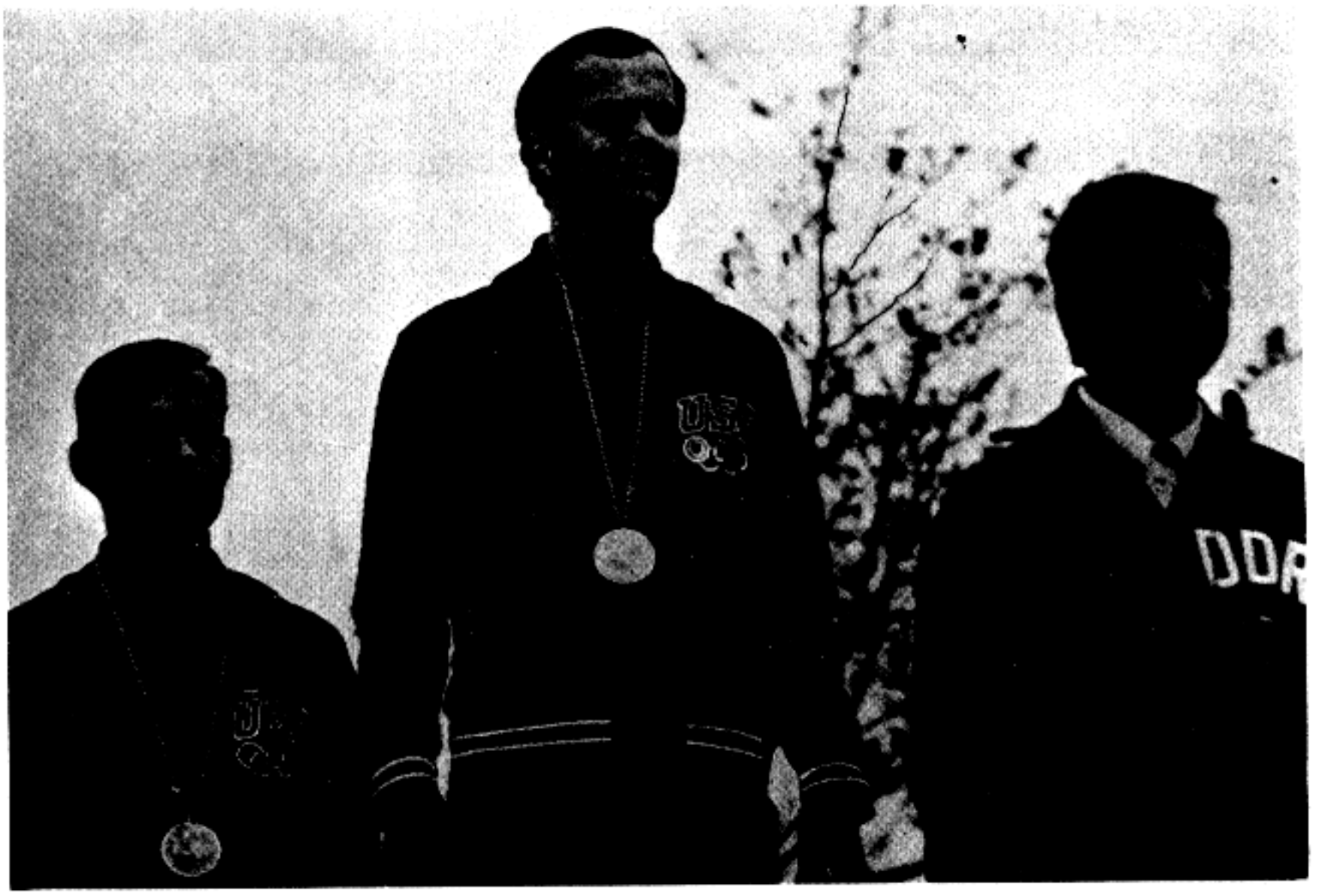


Figure 4. Individual awards ceremony.

Figure 5. Individual awards ceremony.

E. CONDUCTING AN INTERNATIONAL RIFLE MATCH IN THE UNITED STATES UNDER NRA SANCTION.

1. It is obvious that all aspects of the organization and conduct of an ISU match are designed to (1) provide an accurate discriminating means of measuring performance and (2) give every shooter an equal opportunity to deliver the best performance he is capable of producing. This spirit can prevail in an ISU match even though some aspects of its organization and conduct are modified to adapt it to less expensive facilities.

2. Sponsors should not hesitate to conduct ISU type smallbore matches as they are becoming more and more important, especially among the younger shooters that hope to someday compete for their country.

3. As stated before, the firing points should be covered and enclosed on three sides. We feel that this is essential to the proper conduct of an ISU type match. Preparing the firing points can be accomplished quite easily, especially if a roof already exists over the firing points.

4. The purpose of the enclosures is to protect the shooters from wind, rain and sun. Any material, and any design of construction, which will serve this purpose, is adequate. The enclosure may be temporary or removable so that the range may be converted back to NRA match specifications.

5. Many clubs have found that 6-foot target frames can be erected to form enclosures. Others have used target cloth stretched on portable frames. Any material will serve which keeps out weather and direct sunlight.

6. Notice that two firing points are enclosed together (Figure 3). The enclosure thus forms a booth which houses two shooters.

7. A single rear wall extends the length of the firing line. An aisle or doorway exists between the firing booths so that spectators and officials may walk up and down the firing line without interfering with shooters.

8. The target contains 5 bull's-eyes. One of these bull's-eyes is designated as a sighting target. (There is one target for use at 50 meters, another for use at 50 yards if there is no 50 meter line.) The target sheets are the same size as NRA 50 yard target sheets, and fit standard target frames.

9. Practical requirements dictate that 5 shots be fired in each match score bull's-eyes. This enables the shooters to fire 20 match shots before changing targets. If a half course is fired, the shooter is allowed a total of 6 sighting shots in each position. If a full course is fired, the shooter is allowed a total of 12 sighting shots in each position. (The usual 10, plus 2 for the delay in changing targets.) Any unusual delays entitle the shooters to two (2) more additional sighting shots immediately after the cease fire is lifted. Under NRA modified rules unlimited sighters may be fired.

10. Officials and shooters will find that matches conducted in such a manner will run just as smoothly as a regulation NRA type match, and perhaps more so because shooters are not rushed in changing targets or equipment.

11. Match officials are sometimes over-concerned with the shooters' equipment. Rarely is illegal equipment used intentionally. Many times the official rules do not cover certain situations or items of equipment. In such cases judgment must be rendered from the spirit of the competition rather than the rule book. Officials should not hesitate to call upon the advice of experienced ISU shooters in determining the admissibility of a specific piece of equipment.

12. Many shooters will be interested in ISU matches in 50 foot indoor gallery ranges. Matches may be conducted with no modifications to existing range facilities. Half course and full course matches may be registered with the NRA.

13. Fifty meter international targets reduced for use at 50 feet are available. These targets (A-36) have 12 bull's-eyes, two of these designated as sighting bull's-eyes. Only one shot should be fired at a match score bull's-eye. Any number of shots may be fired on a sighting bull's-eye.

14. Sponsors, match officials, and competitors are encouraged to become familiar with ISU Rules. Copies of the rules may be obtained from the National Rifle Association.

CHAPTER II

SHOOTING EQUIPMENT

A. RIFLES FOR INTERNATIONAL COMPETITION. Each international course of fire lends to a specific type or style of rifle for competition. These rifles vary according to ISU rules governing competition and the shooters preferences.

1. Prone Rifle:

a. The prone rifle is designed especially for the prone position. The stock is generally longer with a built-up cheek piece to enable the competitor to maintain position over long periods of time. The smallbore prone rifle is .22 caliber long rifle and the full bore prone rifle will not exceed 8 millimeters, or .323 caliber. (Figure 6)

b. The prone rifle may be used in the English Match and the prone phase of the three-position event. Due to its particular design, the prone rifle is generally not used in any other position.

2. Free Rifle:

a. The free rifle is fully defined in the ISU rulebook as a rifle with a thumb-hole stock, a removable palm rest, and an adjustable butt assembly with an interchangeable hook and plate. The smallbore free rifle is .22 caliber long rifle and the full bore free rifle is a caliber not to exceed eight millimeters. The free rifle is used in all positions because of its inherent ability to be adjusted to any shooters body configuration and position requirements. (Figure 6)

b. The three position rifle may be used in the English Match and in all positions of the three position free rifle matches.

3. Standard Rifle:

a. The standard rifle is any rifle which does not have a thumb-hole stock, adjustable butt plate, butt hook, hand stop, and does not exceed 11.1 pounds and specific length and width measurements (see ISU rules). The standard rifle is designed to enable the shooter to complete in prone, kneeling and standing positions of the standard rifle match. The smallbore standard rifle is .22 caliber long rifle and the full bore standard rifle is not to exceed eight millimeters. (Figure 6)

b. The standard rifle was designed primarily for the standard rifle match; however, if the competitor desires, he may compete in the English and/or three position match with the standard rifle. The full bore standard rifle, when fired in a military match, is called an Army rifle.

4. Air Rifle:

a. The air rifle is designed to meet the same requirements as the standard rifle. It is .177 caliber and is fired at 10 meters (33 feet). (Figure 6)

b. The air rifle is used only in the 10 meter air rifle match. The match consists of 40 shots fired from the standing position.

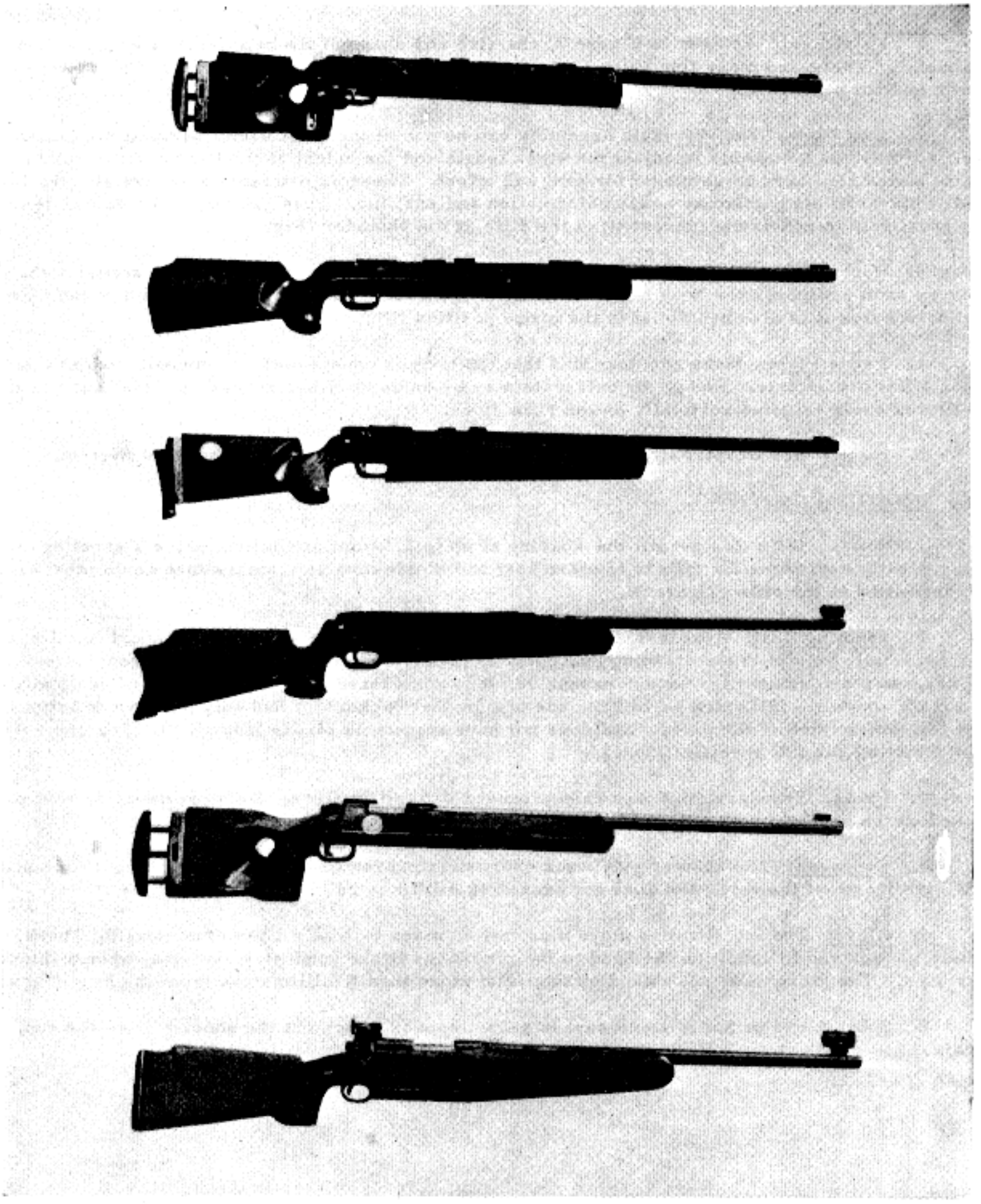


Figure 6. Rifles used in International Competition from top to bottom: smallbore position rifle, smallbore prone rifle, smallbore standard rifle, air rifle, full-bore free rifle, full-bore standard rifle (army rifle).

B. ACCESSORIES FOR INTERNATIONAL RIFLES. Each shooter should equip his rifle with all the necessary items to compete on an equal level with his opponents. The international shooter should make sure his equipment conforms to ISU specifications.

1. Palm Rest: As seen in Figure 7, the size and shape of the palm rest is up to the individual shooter. There are many fine palm rests produced commercially; however, some shooters make their own custom palm rests.

2. Butt Plate: The butt plate assembly can be one of the most useful parts of the international rifle. Besides being able to adjust the stock length and the height of the hook or prone plate, the newer butt plates also have adjustments for cant and offset. These adjustments allow the shooter to modify his rifle to fit his particular body conformation and position. Used properly, the butt plate can also be a great help in consistent placement of the rifle to the shoulder (Figure 8).

3. Hook: The hook is used mainly to help the shooter place the rifle in his shoulder the same way every shot. Although the hook is used mostly in the standing and kneeling position, a number of good shooters find it is also beneficial in the prone position (Figure 8).

4. Prone Plate: Many shooters find that the hook is unnecessary or uncomfortable; therefore, they use a flat prone plate. The prone butt plate may be made of either rubber or metal and has the capability of being adjusted vertically on the rifle stock.

5. Sights: See Chapter III, the Integrated Act of Firing - The Eye and Sight System.

C. SHOOTING CLOTHING.

1. Shirts: ISU rules permit the wearing of up to 2.5-mm of clothing under a shooting jacket. Their use greatly decreases the effects of pulse beat and single muscle tremors that would otherwise be transmitted to the rifle (Figure 9).

2. Shooting Coat: A leather shooting coat gives the shooter some body support in all positions. It is especially helpful in the standing position. Legal leather coats are available from American and European manufacturers. Though expensive, it is considered a worthwhile item of equipment for the serious shooter. ISU rules permit the use of a leather jacket that has only one row of buttons located in the center third of the jacket, and does not have adjustable straps (Figure 9). (For some detailed information see ISU specifications.)

3. Pants: Trousers thickness cannot exceed 2.5 millimeters. Reinforcement or skid pads may be used on the seat and both knees (Figure 9).

4. Footwear: The shooter may wear nonrestricting footwear in which the height does not exceed 2/3 the length of the sole, and does not exceed 10 millimeters in thickness (Figure 9).

5. Glove: The ISU shooting glove must not be more than 12 millimeters total thickness. More time is required to condition the hand to the pressures of the hand-stop and sling when a thinner glove is used. The glove must not extend up the wrist more than 5 millimeters from the hand (Figure 9).

6. Hat: A cap or hat of some sort is recommended to protect the shooter from the sun, wind, and rain.

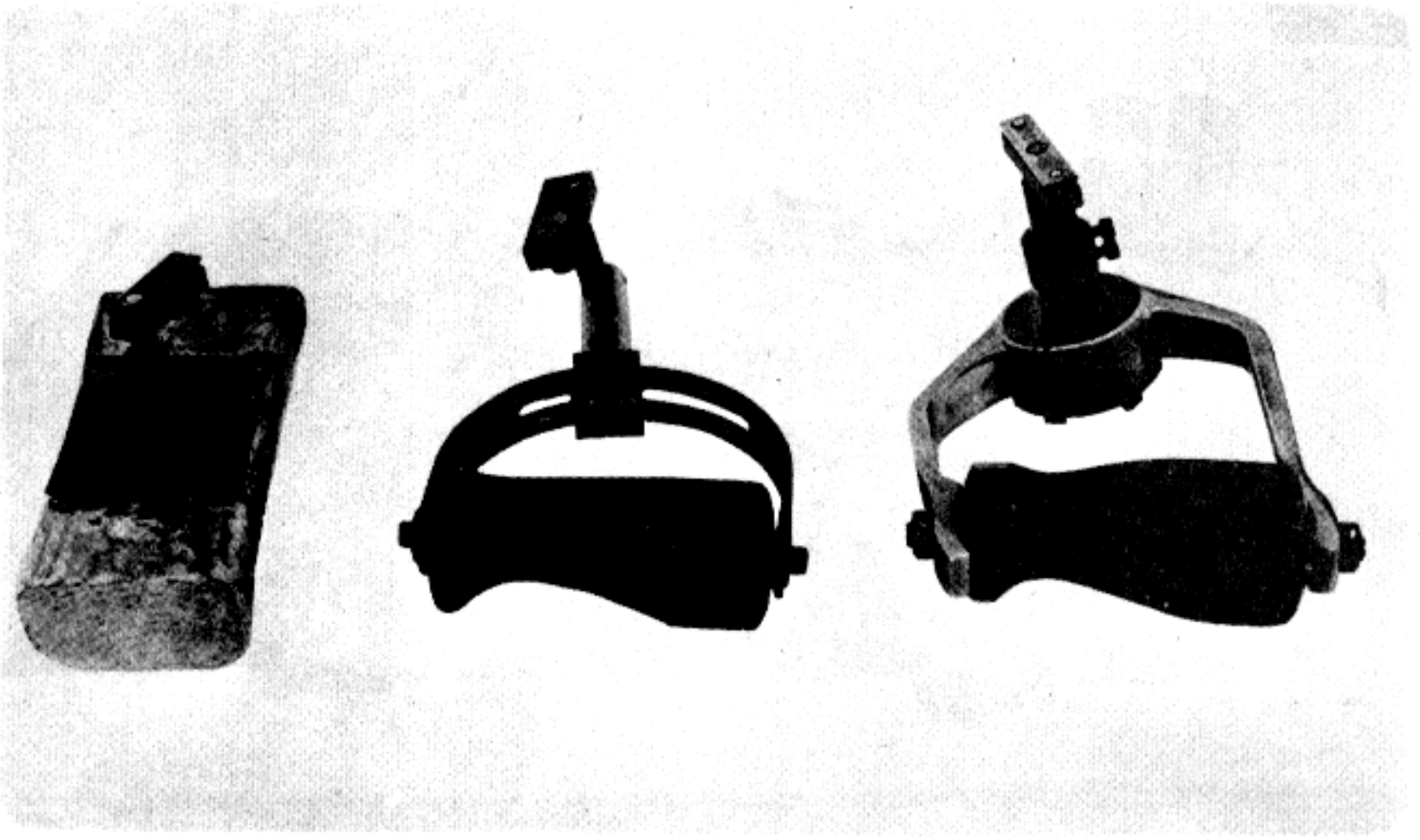


Figure 7. Palm rests.

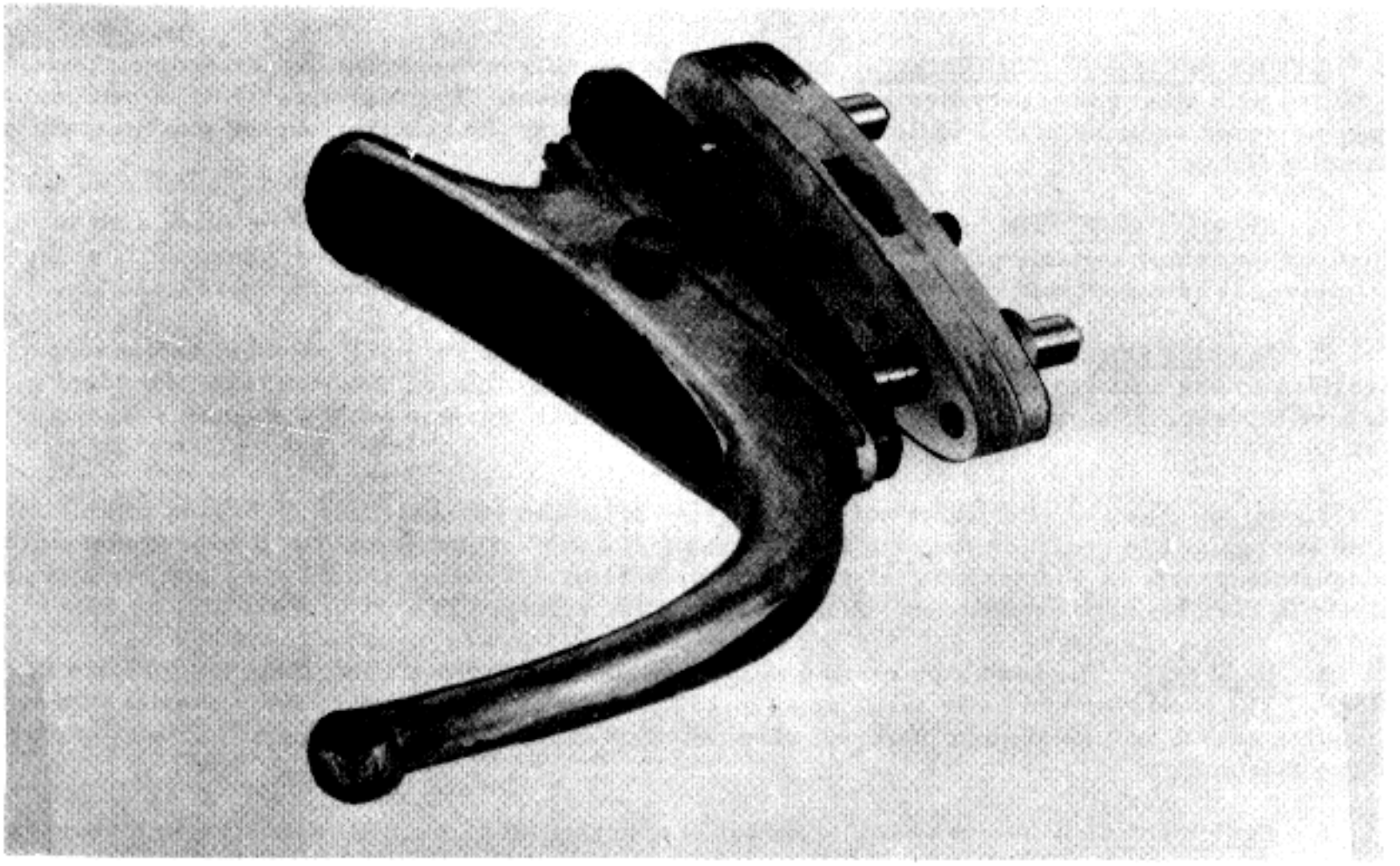


Figure 8. Adjustable butt and hook assembly.

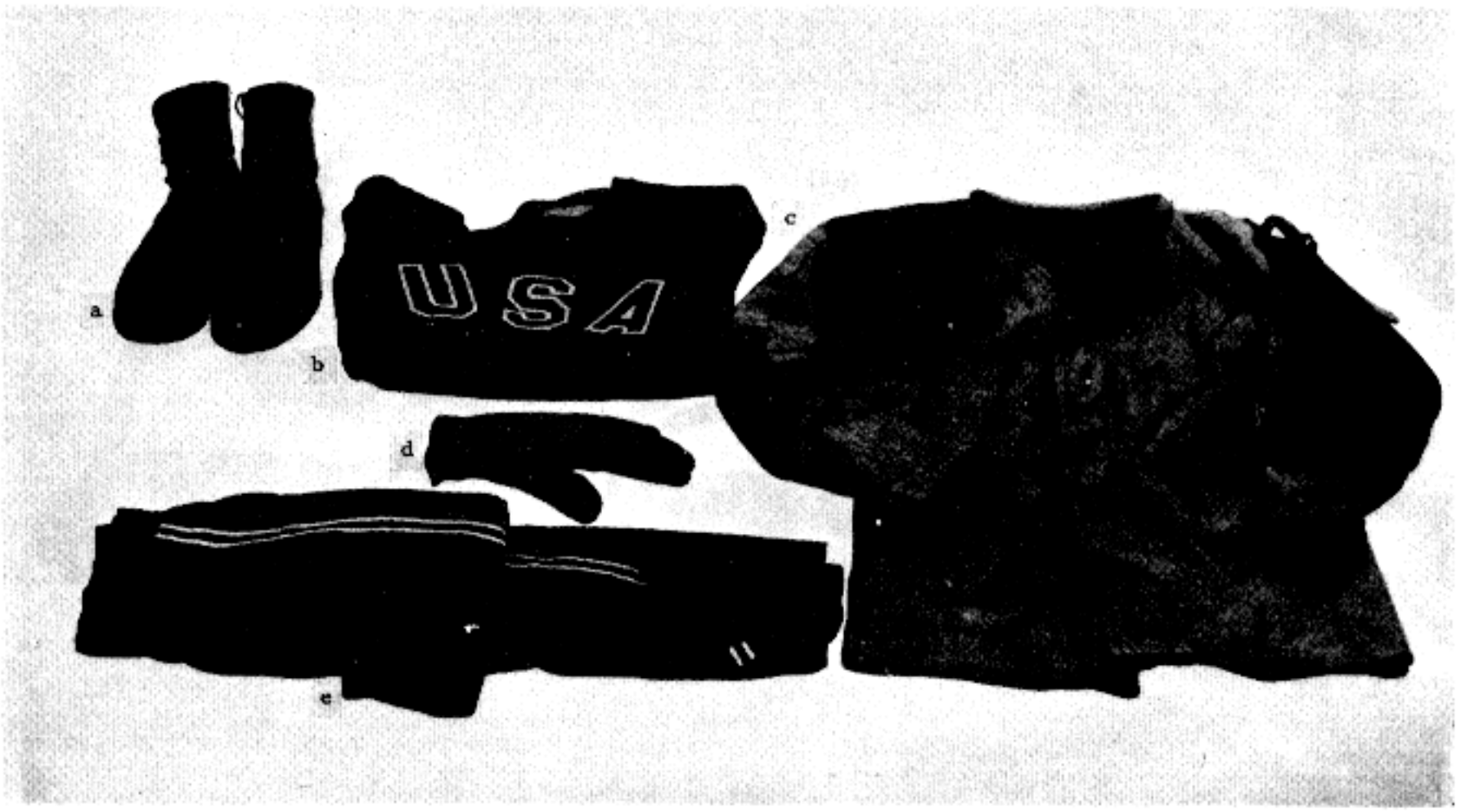


Figure 9. Shooting Clothing: (a) Boots, (b) Sweat shirt, (c) Shooting jacket, (d) Glove, (e) Trousers.

D. OTHER SHOOTING EQUIPMENT. In addition to the rifle accessories, each shooter should be outfitted with other necessary items of clothing and equipment. The following items of equipment are recommended as being useful while at the same time meeting the requirements of the International Shooting Union.

1. Kneeling Roll: The kneeling roll can be made of cloth or leather and be filled with sand, sawdust, or any other suitable material. The roll must be no more than 8 inches long and 7 inches in diameter. The roll should conform to the individual shooters position and instep (Figure 10).

2. Shooting Mat: In international competition shooters are normally required to use mats provided by the host range. Nevertheless there will be many instances where each individual will need to have his own. The mat should be thin and have a non-skid surface for the shooter's elbows (Figure 10).

3. Sling: The ISU sling must not be more than 40 millimeters (1-9/16 inches) in width. More time is required to condition the arm to the pressure of the narrow sling, but it nevertheless provides adequate support. A shooter who intends to participate in ISU events should use a narrow sling exclusively to keep his arm conditioned. A leather sling is preferred to a webb sling (Figure 10).

4. Hand Stop: The hand stop is used to prevent the hand from sliding along the forearm of the stock. The hand stop can be as large or as small as the shooter desires. Some shooters merely use the sling swivel as a hand stop; however, this requires additional conditioning of the hand to prevent undue discomfort.

5. Equipment Box: A sturdy box is useful in carrying all of the miscellaneous equipment that the shooter needs. It should be large enough to comfortably contain this equipment and so arranged to offer maximum protection to delicate accessories such as sights, stop watch, etc. (Figure 11)

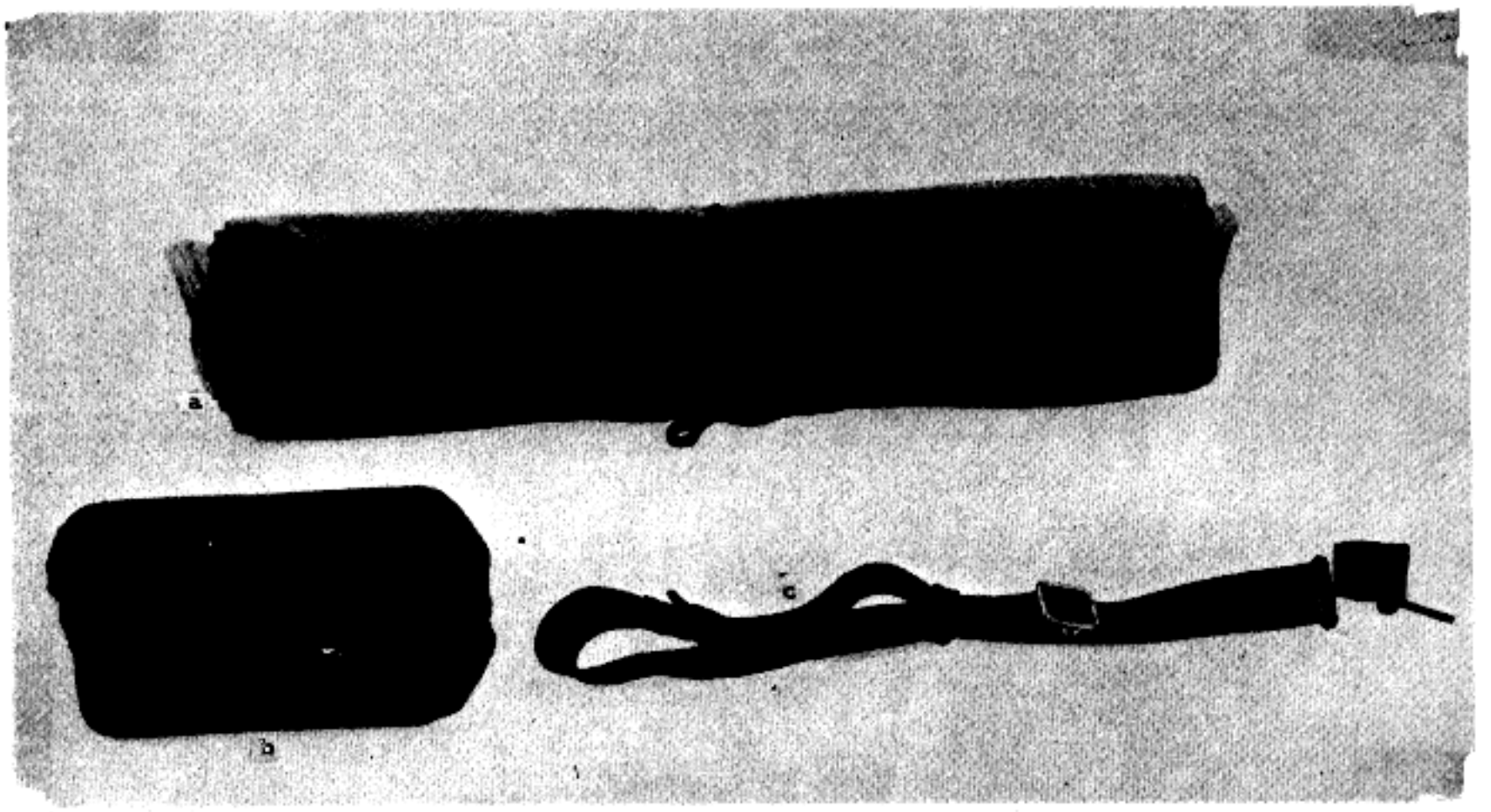


Figure 10. Shooting Equipment: (a) Mat, (b) Kneeling roll, (c) Sling and hand stop.

6. Spotting Telescope with Stand: A telescope gives the shooter a means of spotting his shot. The scope also can be used to study mirage. It should be equipped with a tripod stand capable of adjustment for each shooting position. Most shooters use a telescope with a magnifying power between 20X and 30X (Figure 11).

7. Loading Block: The ammunition loading block not only serves to keep the ammunition clean, but is helpful to the shooter in counting the number of shots fired. The block is usually constructed in wood or plastic with a capacity of holding 50 to 100 rounds (Figure 11).

8. Stop Watch: In all international courses of fire a specified time limit is enforced. The shooter should carry his own timepiece and monitor the remaining time for the course (Figure 11).

9. Balance Weight - Rail Weight: Many shooters employ the use of an added weight attached to the stock of a rifle which extends out under the barrel. This weight known as a balance or rail weight, tends to dampen or slow the movement of the rifle, allowing easier trigger control. It should be noted that the added weight does not stop the movement of the rifle, but may slow the movement. The weight also allows the shooter to lean farther back in the standing position and maintain his non-muscular, bone to bone support.

10. Target Fasteners: The shooter is often required to hang his own targets. On most ranges, a staple gun and/or a set of target clips are sufficient tools to securely fasten targets (Figure 11).

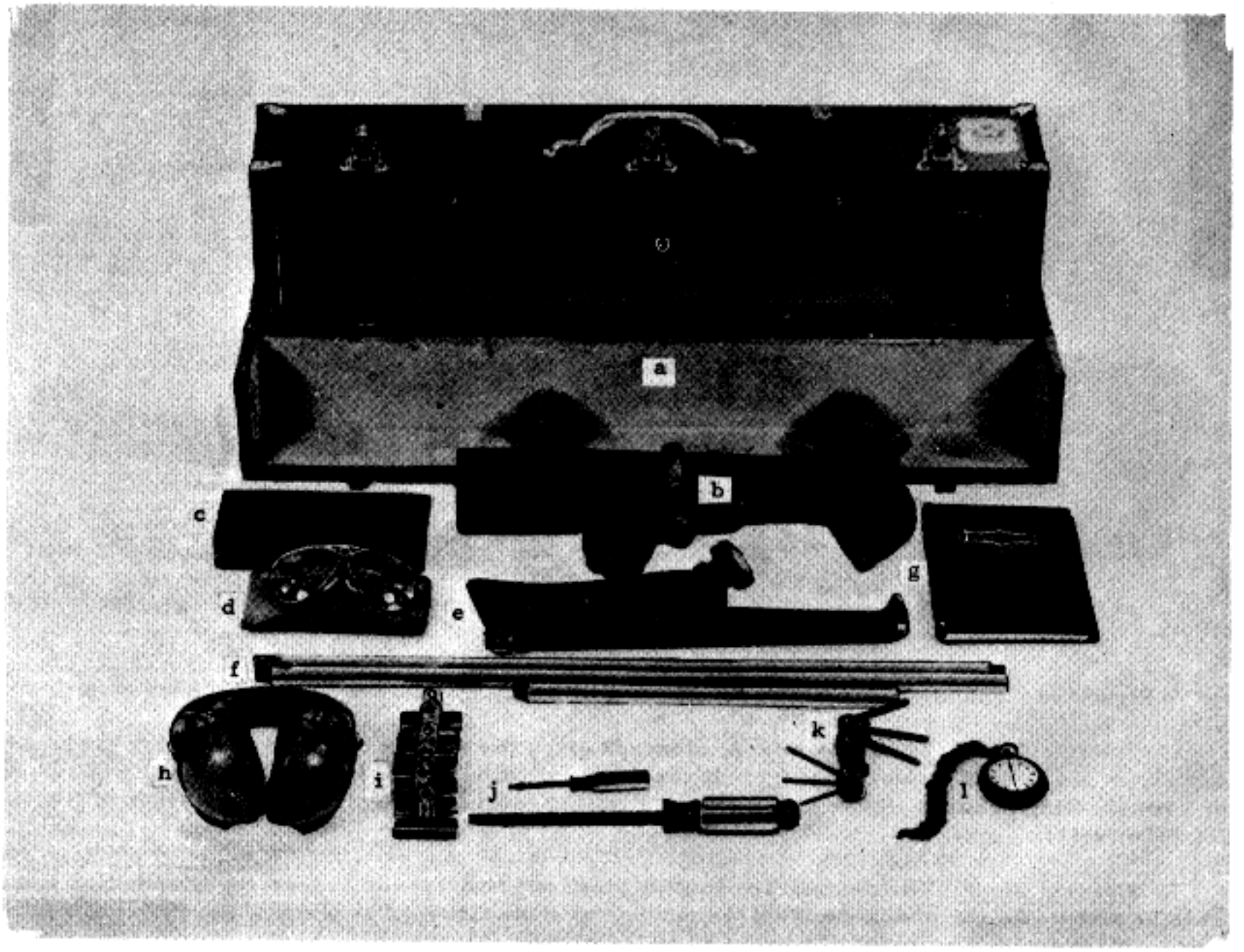


Figure 11. Shooting box and accessories.

(a) Shooting box
(b) Spotting telescope
(c) Loading block
(d) Shooting glasses
(e) Tripod
(f) Extension rods
(g) Notebook
(h) Ear protectors
(i) Target clips
(j) Screwdrivers
(k) Allen wrenches
(l) Stopwatch

11. Shooting Glasses: There are two general types of shooting glasses: those with standard frames and large lenses, and those with normal size lenses and jointed, adjustable frames. Both types are widely used. The chief advantage of shooting glasses is that they allow the shooter to look through a central portion of the lens without interference from the frame. To use shooting glasses correctly, the eye should look through the central lens area where the prescription is focused. Individuals with corrected vision will find these glasses extremely useful. Colored or tinted shooting glasses are available to aid in adjusting to varied light conditions. Dark green, smoke, or blue lenses are used in very bright sunlight and yellow lenses are generally used in dull light. However, some shooters prefer to use one color under all conditions. It must be noted, however, that all colored lenses filter out some amount of light. An additional advantage of shooting glasses is that they protect the eye from gas blow back in case of a ruptured primer or cartridge case (Figure 11).

12. Hearing Protectors: Regardless of how minor the muzzle report seems, hearing protectors should be worn at all times while on the range. In addition to physically protecting the ears from permanent damage, concentration can be significantly improved by eliminating extraneous range noises. (Figure 11)

13. Rule Book: The current rule book is a helpful item of the shooter's equipment. It is the shooter's responsibility to be familiar with all the rules and regulations governing the match in which he is firing.

14. Shooting Notebook (Diary): Every shooter should keep a notebook to record information he has found to be helpful to his performance. This notebook may include concrete information such as sight setting for specific range zeros as well as experimental ideas or psychological conditions which the shooter has formulated. It is important that these facts, ideas, and personal techniques be promptly recorded rather than left to memory. This information can provide the key to consistent improvement and good scores (Figure 11).

15. Tools: A few small tools should be carried to perform adjustments on the rifle and its accessories. A small and large screwdriver plus a set of allen wrenches will be useful (Figure 11).

16. Cleaning Rod and Materials: The cleaning rod should be a one piece steel rod coated with a plastic material softer than the rifle barrel. In order to maintain a high degree of accuracy and correct rifle function, proper cleaning materials are required. These materials may include: Bore brushes, cloth patches, solvent, lubricant, bolt brush, rust inhibitor, and cleaning rod guide. Arms manufacturers recommend regular cleaning to maintain maximum accuracy of their rifles (Figure 12).

17. Rifle Cases: All rifles should be transported in cases of some sort. A canvas or leather case is sufficient for dally use and will keep the rifle safe from scratches, dust, and the weather. When transporting the rifles for a long period of time or when abusive treatment is likely to occur, a metal or wooden box should be used for additional protection (Figure 13).

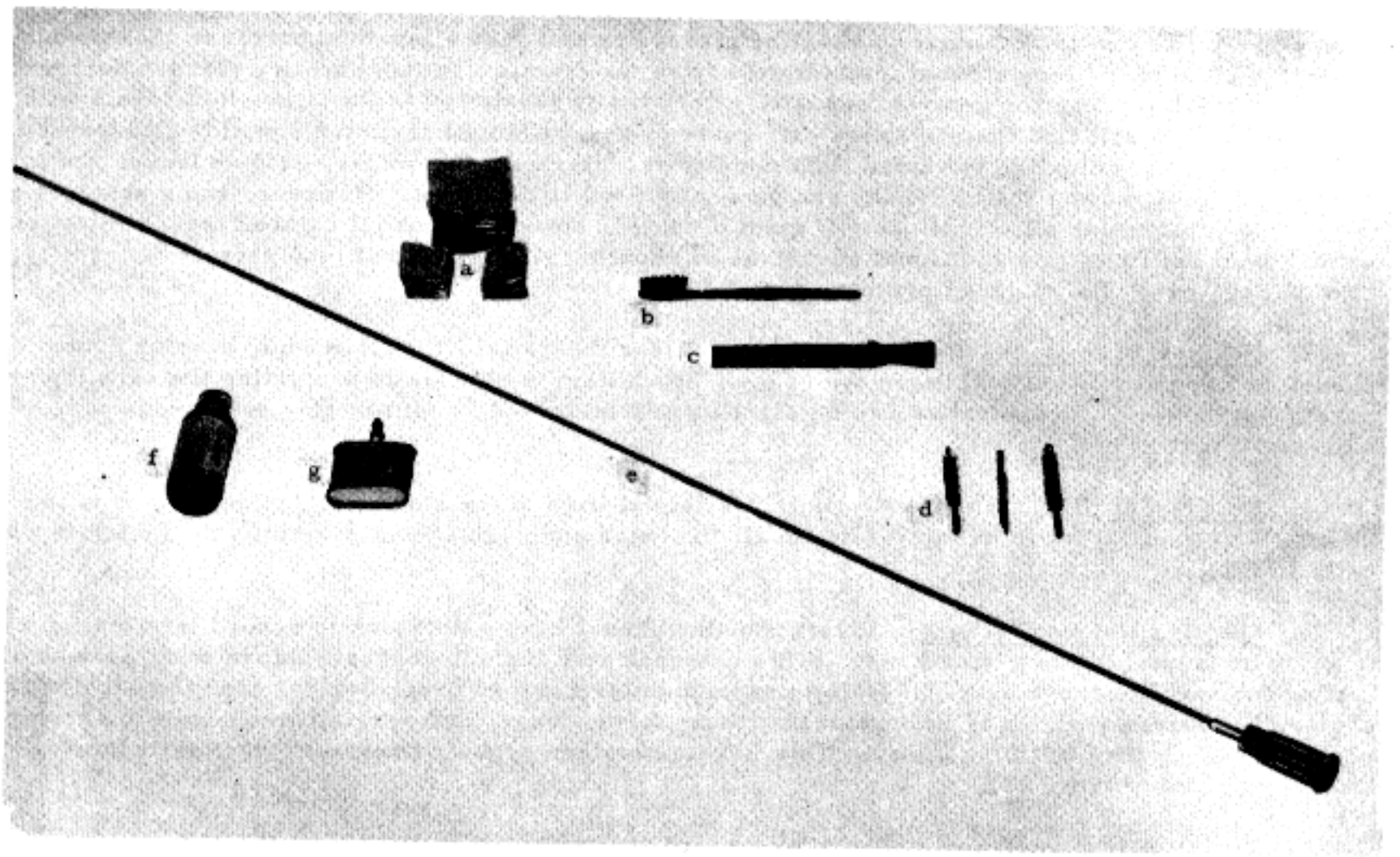


Figure 12. Cleaning equipment.

(a) Patches
(b) Brush
(c) Cleaning rod guide
(d) Cleaning rod brushes and jag
(e) Cleaning rod
(f) Solvent
(g) Oil

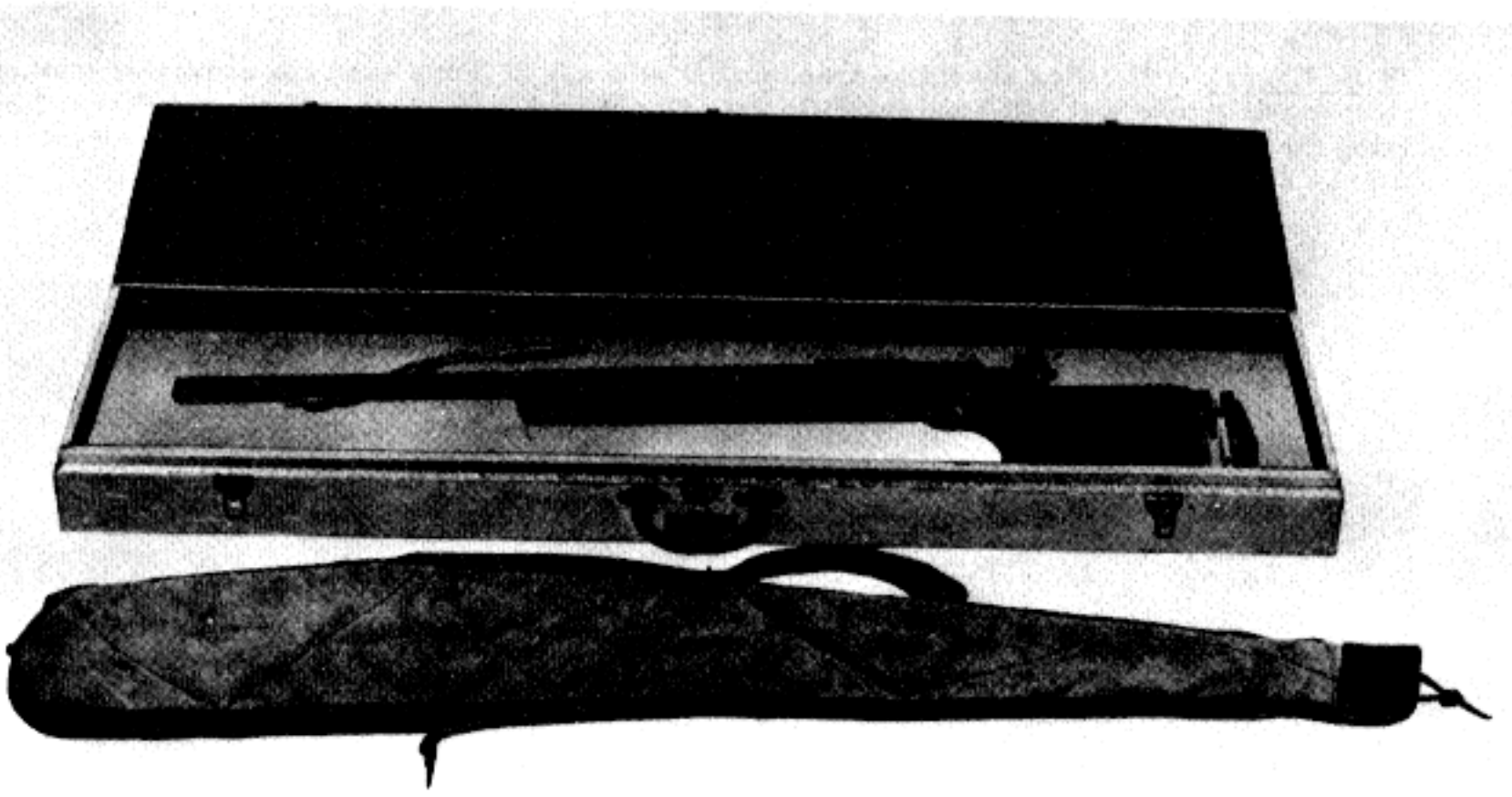


Figure 13. Rifle cases.

CHAPTER III

THE INTEGRATED ACT OF FIRING

A. GENERAL. In this chapter we are going to consider several of the factors that must be integrated to produce the total act of firing a shot. The reader should bear in mind that we consider each factor separately only for ease of discussion. All converge and are coordinated at a single moment to produce the shot.

1. To the spectator, the performance of a shooter appears deceptively simple; the shooter places the rifle in position, takes aim, and pulls the trigger.

2. But the man behind the rifle knows differently. Shooting is not simple; it involves a complex coordination of several mind and body functions.

B. SHOOTING METHOD. It is relatively easy to talk or write about correct shooting methods. To put these methods into practice is vastly more difficult. It is because of this challenge that shooting fascinates so many thousands of people.

1. The shooting method USAMKTU shooters accept is that of holding the rifle in the 10-ring and activating the trigger without disturbing the rifle. This method requires the shooter to develop his ability to hold the rifle motionless.

2. The other method is to allow the rifle to move about on the target, and fire the shot as the rifle crosses the 10-ring. This method of "shooting on the move" has a definite disadvantage in that the shooter cannot always predict the precise path of the rifle's movement. He will therefore never completely eliminate wild shots.

C. BREATH CONTROL.

1. General. The breathing process provides the body with oxygen and eliminates waste elements from the blood. Correct breathing is essential to proper body function.

2. A complete respiratory cycle lasts 4-5 seconds. Inhalation and exhalation require only about 2 seconds. Thus between each respiratory cycle there is a pause of 2-3 seconds. This pause can be extended to 6-8 seconds without any special labor or unpleasant sensations. It is during an extended pause between breaths that the rifleman should fire the shot. (Figure 14) The reason being that during the respiratory pause the breathing muscles are relaxed and the shooter avoids strain upon the diaphragm. Also his concentration is not broken by thinking of the need to breathe.

3. Holding the Breath.

a. When a beginning shooter is told that holding his breath will assist in steadying the rifle, he may instinctively relate this action to holding his breath in the manner that he would prior to submerging in water. Inhaling deeply and holding the air in the lungs is NOT a correct procedure in marksmanship.

b. A shooter should assume his position and breathe naturally until his hold begins to settle. He then takes a slightly deeper breath; exhales and pauses, expecting to fire the shot during the pause. If the hold does not settle sufficiently to allow the shot to be fired, the shooter resumes normal breathing and repeats the process. The technique is graphically portrayed below.

4. The respiratory pause should never feel unnatural. If the pause is extended for too long a period, the body suffers from oxygen deficiency and sends out signals to resume breathing. These signals produce slight involuntary movements in the diaphragm and interfere with the shooter's ability to concentrate. Generally speaking, 6-8 seconds is the maximum safe period for the respiratory pause to fire a shot.

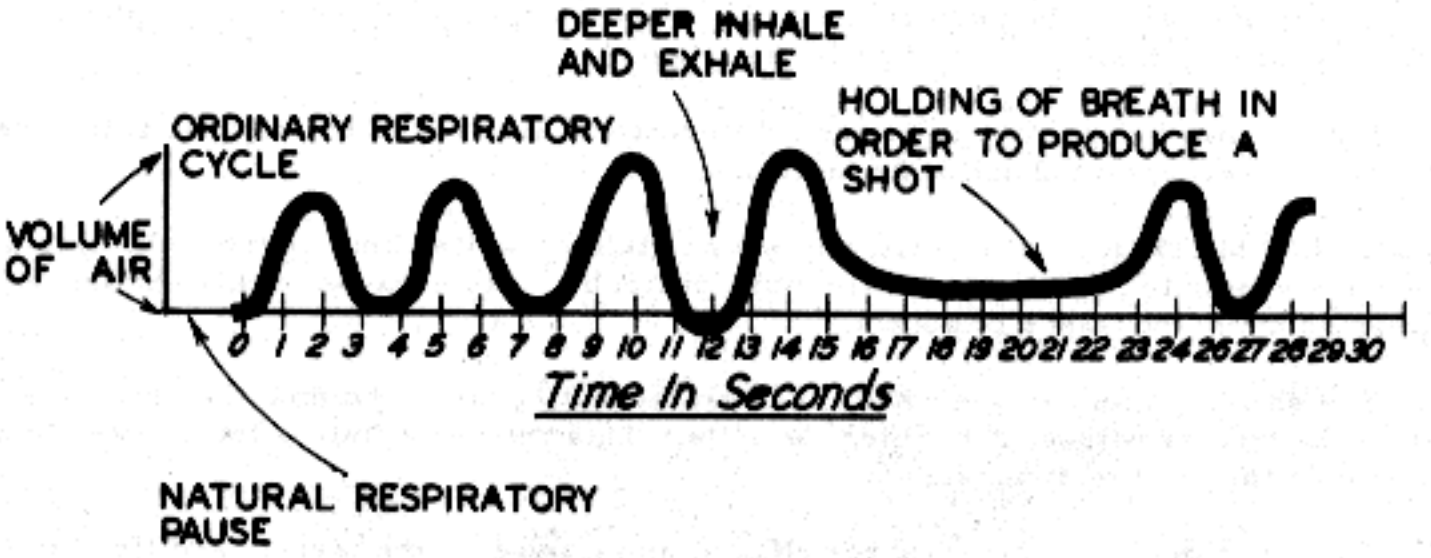

DEEPER INHALE AND EXHALE
HOLDING OF BREATH IN ORDER TO PRODUCE A SHOT
ORDINARY RESPIRATORY CYCLE
VOLUME OF AIR
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 27 28 29 30
Time In Seconds
NATURAL RESPIRATORY PAUSE

Figure 14. The respiratory cycle.

D. THE EYE AND THE SIGHT SYSTEM.

1. General. The shooter need not concern himself with a scientific knowledge of the eye. He should be concerned only that his eyes are healthy, that he can see clearly, and that he uses his eyes properly while shooting. A layman should never attempt to prescribe or administer treatment to defective or injured eyes. A shooter (or anyone) with eye problems should consult a vision specialist. Corrective lenses in no way impair a shooter's ability. Some of the world's best marksmen shoot with corrected vision.

2. The Human Eye.

a. A person with no eye defects normally has 20/20 vision. "Twenty/twenty" does not denote "perfect" vision. It is simply an arbitary standard of measurement applied to visual acuity. It denotes the ability to read alphabetical letters 8.7 millimeters high at twenty feet. This constitutes reading letters contained within 5 minutes of angle. There are many cases of individuals being able to read within 3 minutes of angle, and in some cases, within less than 2 minutes of angle. Weak or defective eyes can in most cases be corrected to 20/20 strength by prescription lenses.

b. Human eyes are as different from one another as, say, human hands. This is true even of eyes that score 20/20 vision. Some eyes see sight pictures best in brilliant light. Others perform best in soft light. Some eyes have great perception of depth and perspective. Others do not. The list of differing characteristics could be made quite long. The important consideration is that two different people are likely to have different eye characteristics, even if they have 20/20 vision. A particular set of sights that provides maximum clarity to one shooter's eyes may not provide the same clarity to another shooter's eyes. Each shooter must select the components of his sight system to fit the characteristics of his own eyes. This rarely involves the purchase of special equipment.

3. Proper Use of the Eyes. While shooting, an individual should remember the cardinal principles in the proper use of his eyes:

a. Look as straight forward as possible out of the eye socket. If the head position causes the shooter to look across the bridge of his nose or out from under his eyebrow, the eye muscles will be strained. This strain will produce involuntary eye movements which reduce the reliability of vision. This will not only affect performance, but the inability to see well will also have a damaging psychological effect upon the shooter (see Chapter II, COACHING). The eyes will function best in their natural, forward-looking position.

b. Do not fix vision on the sight picture for more than several seconds. When the eyes are focused on a single image for a time, the image is "burned" into the area of perception. This effect upon the shooter's eyes is quite important. A burned in sight picture will dull acuity in the critical area of perception; and this image may possibly be mistaken for a true sight picture. Either effect will seriously damage performance.

c. Normally the best use of the eyes is derived when the shooter keeps both eyes open while firing. It is natural for the eyes to work as a refined team. If one eye is squinted or closed the other eye will have a tendency to want to do the same. With both eyes open the shooter also finds it easier to check the wind flags on the range while the rifle is in the aiming position.

d. On occasion there will be a shooter whose aiming eye is not his dominant eye. In this case it might prove helpful to use a blinder. In fact, most shooters do use a blinder regardless of their dominant eye. This tends to decrease visual distractions and increase concentration. Side lighting may also be distracting to the shooter under some light conditions. If harsh light becomes annoying, a blinder may be used here again. Such a blinder may be attached to the shooting glasses or hat brim. The preferred blinder is one that is attached to the rifle in the vicinity of the rear sight. In this manner, the left eye will remain open but the blinder will block out the view down range.

4. Focus of the Eye.

a. Many shooters contend that the shooter should focus his shooting eye on the front sight; that seeing the front sight or aperture clearly and distinctly is the most important visual aspect in sighting. This is not necessarily true. Most shooters have the capability of seeing both the front and target bull with equal clarity. This capability is referred to as "accommodation." When aiming the shooters eye is continuously changing focus from the front sight to the target and back to the front sight. The eye focuses back and forth so rapidly that it appears to the shooter that both images are seen with equal clarity.

b. However, after the age of 40-45 years the eye muscles lose their ability to flick back and forth at the rapid rate required to accommodate both the front sight and target bull. In such a case focus should be concentrated on the front aperture to obtain optimum results in sighting. This will result in the target being somewhat out of focus.

c. Accommodation and visual clarity can be improved by the use of a small rear aperture. A small rear aperture will increase depth of field, enhance accommodation and actually increase visual acuity. For this advantage to be realized the rear aperture must be smaller than the pupil of the eye. The smaller the rear aperture the greater the depth of field and the greater the visual acuity becomes. There is however, a point of diminishing returns regarding aperture size. When rear aperture-size becomes less than approximately one millimeter an inadequate amount of light reaches the eye and vision becomes noticeably poorer.

5. The Sight System.

a. Proper sight alignment can be defined as the process of perfectly centering the front sight in the rear aperture.

b. Sight picture contains the same two elements of sight alignment (front and rear sights) with the addition of the bull or target image. A perfect sight picture exists when the sights are properly aligned and the bullseye centered in the front aperture or properly positioned on the post.

6. The Front Sight: The universally accepted front sight consists of a tublar mount containing a removable insert (Figure 15). The most frequently used inserts are the post and the aperture.

a. The Aperture: The aperture is the more popular insert. The most common error is the use of an aperture that is too small. Generally speaking, the diameter of the aperture should appear to be about 1 - 1 1/2 times the diameter of the target black. However, this is only a guide. The optimum size aperture is the one that reveals a wide line of white around the bull's-eye and allows the target to stand out in clear definition against this white background. The optimum size will change under different conditions of light. An aperture selected under one light condition might under a different light, form a blur around the target or make the target appear indistinct or oblong. A different aperture size will help to correct these aberrations. Each shooter must select the aperture size that meets the requirements of his own eyes under the prevailing light conditions.

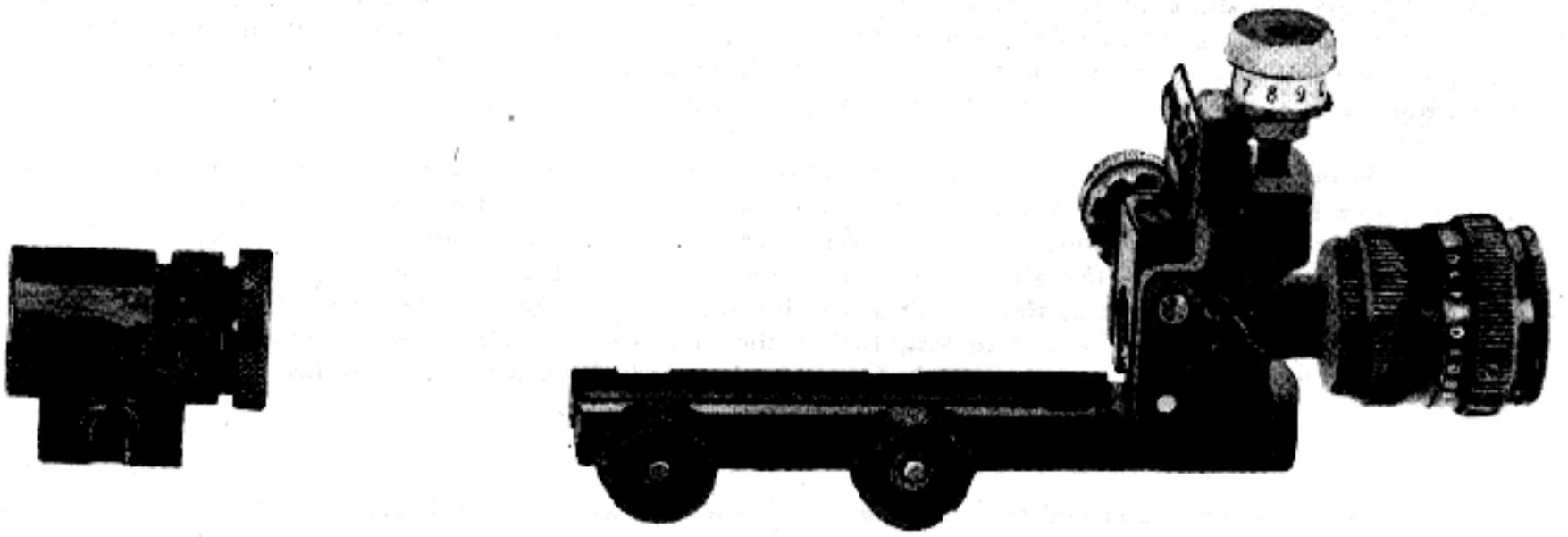


Figure 15. Front and rear sights with adjustable rear aperture.

b. The Post: The post should appear to be the same width as the black portion of the target. The post should approach the target from 6 o'clock. If the rifle is canted, the insert should be altered to compensate for the angle of cant so that the post still approaches the bull's-eye from 6 o'clock. There are two methods of using the post: (1) the 6 o'clock tangent hold, in which the bull's-eye appears to rest on the top of the post; and (2) the 6 o'clock line - of - white hold, in which a narrow line of white is visible between the top of the post and the bottom of the bull's-eye. Both methods are in general use, and the choice of method should be based on individual preference. The tanget and line-of white methods both require extremely keen eyesight. Most good shooters who use a post have better than 20/20 vision (natural or corrected) and a shooter should consider his visual acuity in making a choice between aperture and post.

c. The Disc: The disc insert has become popular with some shooters. The insert consists of a clear or transluscent plastic disc with a center aperture. These discs come in various colors. The disc should conform to the same general standards applied to the metallic aperture. The opening in the disc should be round, clearly defined and easily visible. It should reveal a maximum contrast of the target black against the background. If a shooter prefers a disc aperture and achieves good results with one, there is no reason why he should not use it.

d. Combinations of Inserts: There is no indication that combinations of the above sight inserts contribute to a better mechanical sight system. The shooter may use a combination because of preference; but by all indications, he is only adding to the amount of equipment he must care for and gains nothing in terms of mechanical advantage.

7. The Rear Sight.

a. Mechanically, the rear sight should be rugged, tight, and firmly attached. It should be capable of finely graduated adjustments (1/4 or 1/8 minutes of angle). The adjustment mechanism should be free of slack and should move precisely the same distance with each click of adjustment. The sights should be protected at all times, but especially when being transported.

b. The rear aperture size should be selected to create a clearly defined sight picture and allow easy sight alignment.

c. Most shooters feel that a tight rear aperture (one that allows only a narrow line of white to be visible around the front sight hood) provides for the easiest sight alignment. Slight deviations in alignment are easily noticeable, and sight alignment becomes practically automatic. This line of white around the front sight hood can also be varied by increasing or decreasing the eye relief.

d. Some shooters prefer a large rear aperture (one that allows a wide line of white to be visible around the front sight hood). The large aperture can produce good results. However, because of the large area visible around the front sight, misalignment of the sights is less noticeable. The shooter must therefore consciously watch for errors in alignment. The tight aperture takes greater advantage of the mechanical system in providing for easy alignment.

e. The most important consideration in choosing a rear aperture is visual clarity. By adjusting the size of the rear aperture, the shooter can control the amount of light entering the eye. He can thus affect contrast in the sight picture, or contrast between the target black and white background. Strong contrast and sharp, clearly defined edges are desirable. While this is in part controlled by front sight aperture size (but not by post size), the size of the rear aperture is more critical in controlling definition.

f. We strongly recommend the use of an adjustable rear aperture (Figure 15).

8. Eye Relief. Eye relief is the distance between the eye and the rear sight (Figure 16). There is no measured distance that is correct eye relief for all shooters. In many cases it is controlled by the construction of the equipment. Eye relief can best be evaluated by these two standards.

a. The position of the sight should result in the shooter assuming a natural upright position. The sight should be adjusted to the head position, and not the head position to the sight. The importance of head position is discussed in Chapter IV, INTERRELATED ASPECTS OF POSITION SHOOTING.

b. Eye relief should feel comfortable to the shooter. The rear sight should not be so close that the shooter worries about recoil; and it should not be so far from the eye that he must strain to receive a clear sight picture. Some shooters prefer close eye relief, others distant relief. Average eye relief is about 2-6 inches. Each shooter must adjust eye relief to fit his own eye characteristics.

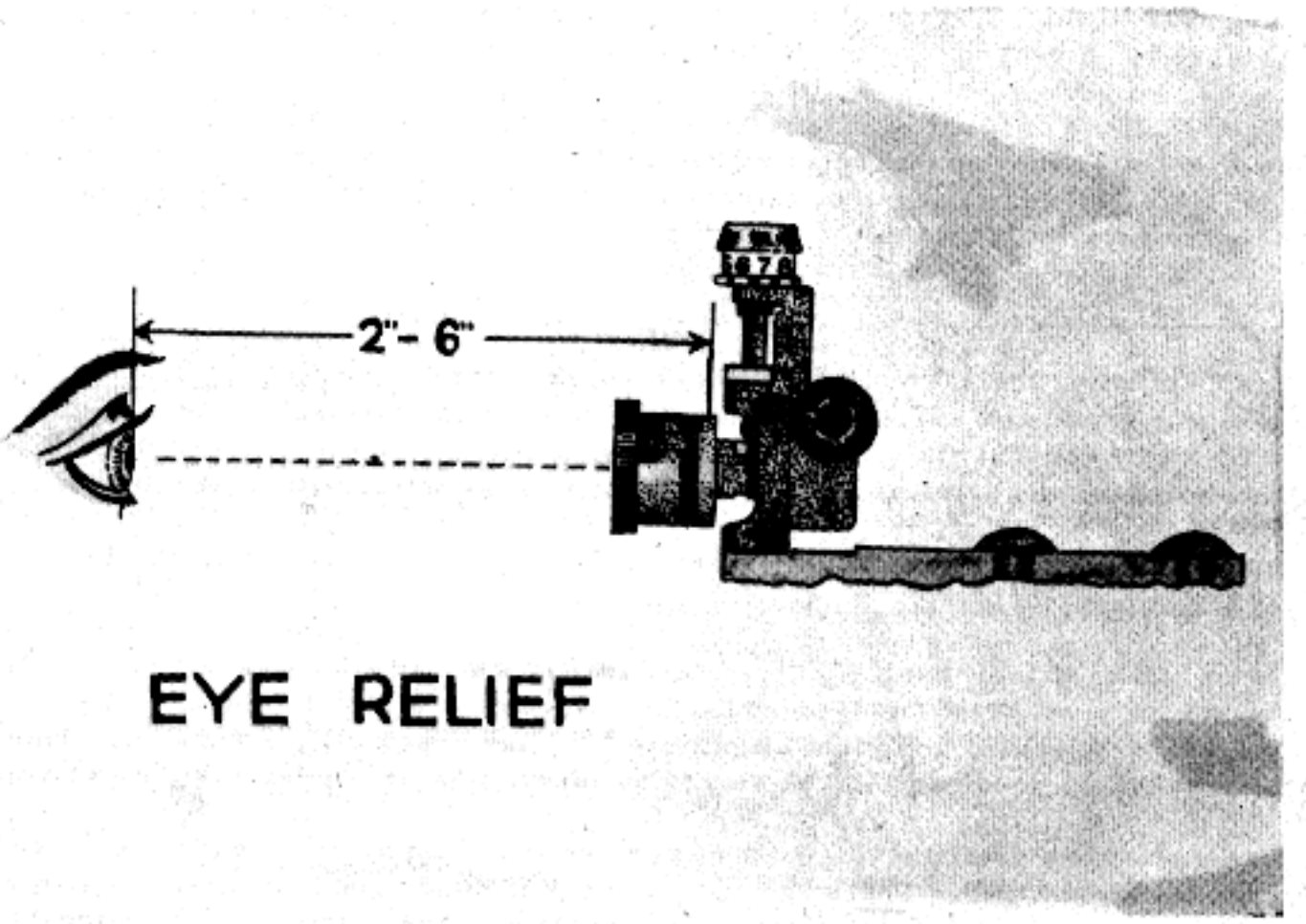


Figure 16. Eye relief.

E. TRIGGER CONTROL. The progressing shooter will at first give a great deal of attention to trigger control. Experienced shooters will also have difficulty from time to time. By making a repeated effort to develop a correct trigger pull, the pull itself will require less and less conscious effort and will eventually assume reflex characteristics.

1. Activating the Trigger.

a. Reflex Action: The awareness of body control will include an awareness of trigger control. However, the shooter can develop his trigger control to the point that activating the trigger requires no conscious effort. He will be aware of the movement, but he will not be consciously directing it. Everyone exhibits this type of reflex activity in daily living. The individual who walks or drives a car while carrying on a conversation is an example. He is aware of his muscular activity, but not "planning" it. He is thinking about the conversation.

b. A closer analogy to shooting is found in typing. When first learning to type, she reads the alphabetic letter she wishes to type, mentally selects the corresponding key, and consciously directs her finger to strike the key. But after being trained, she can simply read the letter she wishes to type and her finger will strike the corresponding key automatically. She no longer has to consciously direct her finger. It is as if a nerve circuit had been formed between her eye and her hand, and the nerve impulse traveled directly from her eye to her finger. The activity resulting from this built in circuit is known as a conditioned reflex. It is conditioned because it is built in or ingrained; it is a reflex because it is not consciously directed.

c. The same type of reflex circuit can be developed by a shooter. When he initially begins shooting, he must consciously direct his finger to pull the trigger when the rifle settles in the 10-ring. As a result of training however, a so called circuit will be established between the eye and the trigger finger. The eye, seeing a sight picture centered on the 10-ring, will then cause the finger to activate the trigger without a conscious mental effort on the part of the shooter. The shooter, like the typist, is aware of the activity of the finger, but is not planning or consciously directing it.

d. Interrupting the Reflex Action: The analogy with the typist was chosen because of the parallel of coordination between eye and finger. But the same type of conditioned reflex is by no means destined to be completed after it is initiated. A familiar example is the baseball player swinging at a pitch. He sees the ball coming, accepts the pitch as being within his batting zone (this acceptance does not necessarily involve thinking with words), and starts his swing. If the batter is well trained, the swing is "in the groove." It is automatic in the same sense that the typist's finger movements are automatic. He sees the path of the ball and automatically adjusts his swing to meet the ball. But if the batter suddenly sees that the pitch is a bad one, he can stop the swing before it crossed the plate. He can "break the circuit", so to speak, that has been established between the eye and his body muscles.

e. A shooter can do the same thing. He accepts a sight picture and the trigger pull starts automatically, just as the batter's swing started when he accepted the pitch. But if the shooter suddenly realizes that his rifle is beginning to move out of the 10-ring, he can "break the circuit" and stop the trigger pull. He must then begin the entire shooting cycle over again.

2. Basic Methods of Activating the Trigger.

a. The finger is placed close to the trigger, and may actually touch it. When the sight picture appears correct the shot is released by a single swift increase in finger pressure on the trigger.

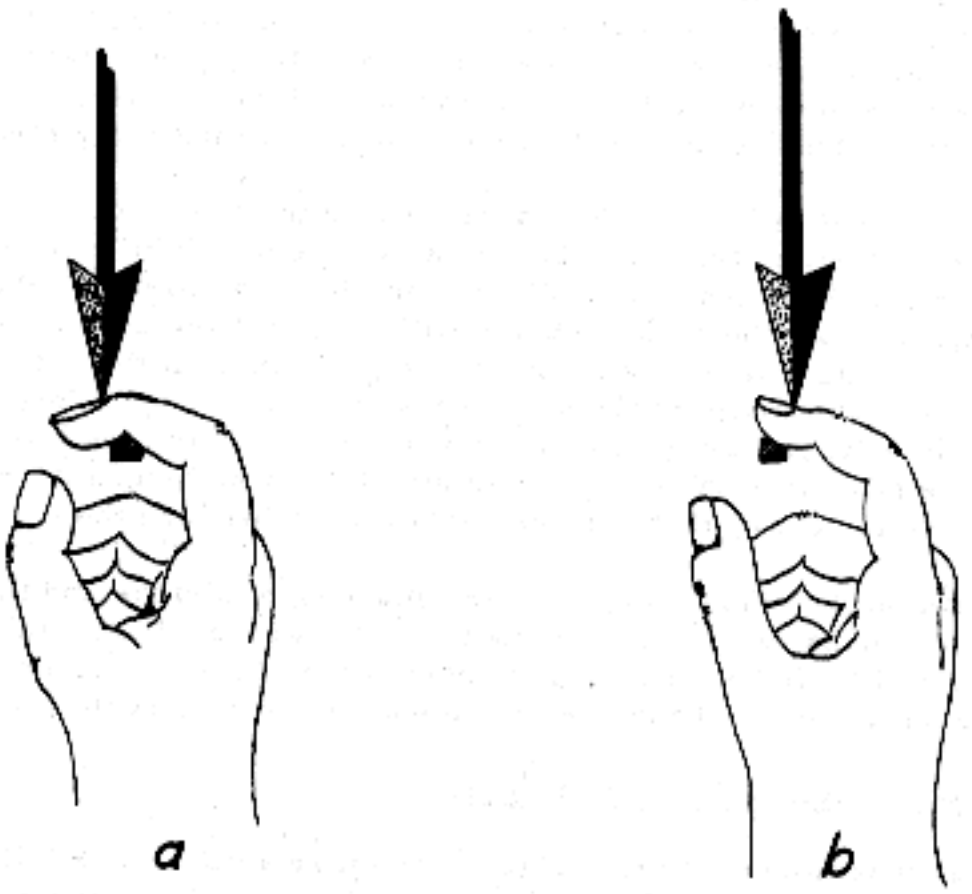
b. When the hold begins to settle, the finger applies pressure to the trigger. As long as the sight picture looks good or continues to improve, the pressure is increased. If the picture deteriorates, pressure is maintained at a constant level or removed completely. Pressure is resumed when the picture starts to improve. There are variations of each of these methods. A beginning shooter should experiment with more than one technique to find the method which best suits his coordination. He should then stay with that method until he has mastered it completely. Some advanced shooters develop a slightly different technique for each position.

3. Finger Placement.

a. In shooting with a light trigger---one that weighs under 8 ounces---the tip of the finger is usually placed against the trigger (Figure 17). This is the area of great sensitivity on that finger and this sensitivity is required for optimum control of light triggers.

b. Some shooters have developed good control when using medium weight trigger that weighs between 8 ounces and 2 pounds by placing the finger on the trigger at the first joint as shown (Figure 17A). There has also been some success in manipulating medium triggers by using the finger tip method usually reserved for a lighter trigger (Figure 17B).

c. When using a trigger that pulls greater than 2 pounds, the finger should be placed on the trigger as in (Figure 17B). This method permits greater control of relatively heavy triggers.



CORRECT PLACEMENT OF THE INDEX FINGER
ON THE TRIGGER

Figure 17. Placing the finger on the trigger.

4. Types of Triggers. There are several types of triggers used in national and international competition. Each of these triggers has been used extensively and successfully in competition. The shooter should choose the type of trigger which best suits his coordination and personal preference.

a. Single stage trigger - A single stage trigger is one in which no noticeable movement of slack exists until the instant the trigger sear disengages. Trigger weight or activation weight may range from pounds to ounces.

b. Two stage trigger - A two stage trigger has a noticeable amount of movement or travel before reaching a distinct resistance, at this point, it functions as a single stage trigger. When the pressure used to activate the first stage is released, the trigger returns to its original position; therefore, the first stage may be activated repeatedly without effecting the second stage function.

c. Set trigger - The set trigger may function as either a single or two stage trigger. If it is cocked only by closing the bolt, it acts as a two stage trigger; however, if it is cocked by closing the bolt and by the manual setting device, it functions as a very light single stage trigger. Weight variations may range from approximately 6 ounces to less than 1 ounce.

CHAPTER IV

INTERRELATED ASPECTS OF POSITION SHOOTING

There are certain common characteristics of the basic fundamentals that apply to all three international positions.

A. THE SPOTTING TELESCOPE. It should be explained to a new shooter that it is important to place his spotting telescope in a favorable location (Figure 18). This is true of all the shooting positions, but it is most critical when shooting the prone positions. The scope should be placed so that only a slight movement of the head is necessary to bring the eye to the lens. If the shooter must raise or move his body to see through the scope, he may change the established position for his next shot. This shifting can change the natural point of aim or the head position. Unless the change of position is redressed it can move the point of impact.

B. THE SLING. The proper use of the sling is a problem that constantly confronts the shooter. As recommended in the chapter on equipment, a sling should be made of leather. The sling is used to support the weight of the rifle. The left arm alone should not be used to support the rifle in any position.

1. The sling is fastened to the rifle at the under side of the stock. Some shooters use a large hand stop while others select a very small one. The determining factor in hand stop selection is the comfort of the left hand. The sling should pass flatly over the back of the wrist. Most shooters soon learn not to wear a wrist watch underneath the sling.

2. The sling is fastened to the upper left arm at one of two places; above the tricep or below the tricep (Figure 19). These locations are the best because they will conduct the minimum pulse beat. The sling is tight on the rear of the arm, yet does not form a tourniquet about the arms as that will restrict blood flow and result in a greater pulse beat. The sling provides a space along the front of the arm to allow for proper circulation of the blood (Figure 20).

3. If the sling is too loose, it will slide down the arm and lose its support value. The shooter should insure that the sling does not slip in this manner.

4. The final decision as to length of the sling and placement on the arm is made by the individual when he determines where he gets the best support, steadiness, and comfort.

C. REQUIREMENTS OF A POSITION. There are certain satisfactory results that we want from any shooting position that we build. First we decide what we want and then we work on how to achieve the goal.

1. The most important requirement of a position is that it must provide a good hold. We will define hold as the area of movement during the period which a shooter contemplates firing the shot. The shooter that most frequently holds in the 10-ring will be the one that most frequently hits the 10-ring. The center of gravity of the rifle-body structure must be located so that maximum use will be derived from all available support areas.

The shooter has two methods of appraising his hold. One of these methods is the movement (or lack of movement) he sees in his sight picture. The other is the movement (or lack of movement) he feels in his muscle systems. As closely related as they are, these two methods become clearly separated in the mind of a trained shooter.

Figure 18. Spotting scope placement.

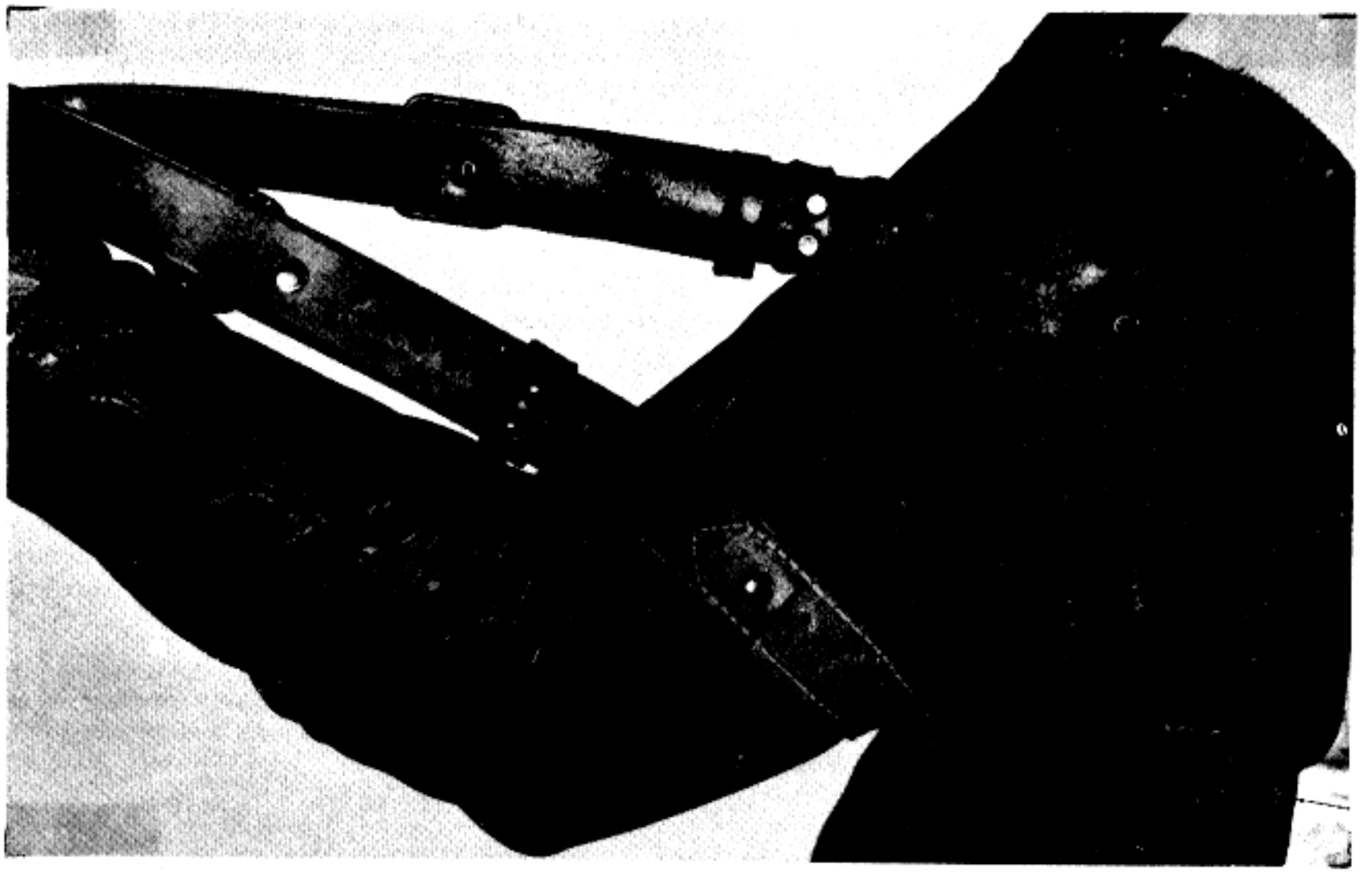


Figure 19. Sling placement.

2. The second consideration is the amount of shooter comfort that is established. In the chapter on training we talk of concentration. A shooter that is experiencing pain from an assumed position will not be able to concentrate his full effort on such important matters as delivering the shot and watching for changes in wind conditions.

3. The third consideration is to insure that the body is functioning properly. Make sure that blood is flowing to all parts of the body. Check to insure that breathing is not restricted because of constriction in the chest and/or stomach. The shooter must find a position that allows for efficient body function while he is firing.

4. The position must be legal as stipulated in ISU regulations.

D. COMMON BODY CHARACTERISTICS. As one thinks about the functioning of human body during international position shooting there are some striking questions that might come to mind. The majority of these queries will relate to the reasoning that if the human body functions best in its normal configuration, why should one attempt to change from the normal manner of operation in order to shoot a rifle?

1. An alert person normally stands, walks, sits with his back and head erect and his eyes looking straight forward out of the sockets. If the head is tilted, the organ of balance located in the inner ear, senses that part of the body is out of the balance or tone and automatically sends out signals to correct the tilt. Consequently, a slight body sway is stimulated involuntarily. You may check this resultant sway by standing for a period of time with your head tilted sharply to the side. Why then do many shooters fire from the standing or kneeling positions with their heads placed at a side tilt? Or why do some shooters lean their heads extremely far forward until their eyebrows touch the rear sight?

2. The head should be held level and upright as possible in all positions so as not to excessively disrupt the balance mechanism. Also, eye relief must be maintained.

Figure 20. Sling Tension.

E. BUILDING THE POSITION.

1. When building a position, one must utilize the available support areas to the maximum. A prone position is more stable than a standing position because there is a much larger support area. In positions where only a minimum of support area is available, the shooter must learn to locate the center of gravity of the body-rifle structure so that proper balance is maintained and the best hold is induced.

2. The position that delivers the best hold is based upon bone support. Bone structure supports the weight of the rifle. Because the muscles are relieved of this weight, they are less likely to fatigue and develop tremors. The shooter maintains better muscle control, and his area of wobble remains at a minimum throughout the course of fire.

3. Even though bones support the weight of the rifle, the body is never completely still. If we watch the shooter closely, we will detect a certain amount of swaying movement in the body. This movement is normal. It occurs because the shooters does not reach, and maintain a state of perfect balance. It is impossible for a living, functioning organism to hold itself with rock-like rigidity. There is a continuous, though minute, shifting of tensions and of the center of gravity of the organism. Thus the balance is continually disturbed, and hence the swaying motion. As the position is refined, however, the limits of this swaying motion becomes smaller and smaller. As a result, the movement of the rifle also decreases. Some shooters have refined their standing position to the point that at times movement of the rifle is confined to the 10-ring. Most shooters have not reached this point of refinement. However, with experience most shooters can develop at least a 9-ring hold.

4. If the shooter cannot maintain a 10-ring hold, he must make a conscious effort to stop the sway of the body as the rifle drifts into the 10-ring. He does this through muscle control. In effect, when the rifle drifts into the 10-ring, the shooter uses will power to "hold" the body still long enough to allow correct trigger control.

F. MUSCLE TENSION.

1. To aid in holding the body still, the shooter should maintain a slight degree of tension in all body muscles. This tension provides for finer graduations of muscle control.

2. It must be emphasized that the tension is very slight. Completely tensed or "locked" muscles quickly fatigue and begin to tremble slightly. The correct tension is very near to complete relaxation. Portrayed on a graph, the amount of tension used in shooting would appear as in Figure 21. This tension is so slight that it is hardly felt by the shooter. Experienced shooters are normally unaware of it because it has come to feel completely natural. The degree of tension undoubtedly varies from shooter to shooter. Some individuals use as much tension as they can without becoming fatigued. Others use just as little as they can without losing control of the muscles. It is entirely up to the individual shooter to find and maintain the degree of tension that gives him the best control of his body.

G. ERECT HEAD POSITION. Why does a shooter tip his head to the right while firing? The obvious answer is: He must place his face against the stock to see properly through the sights. The solution to his problem (and tilting his head does cause problems) is to retain the head in the normal erect position and bring the rifle to his face.

1. This necessary condition is accomplished by lowering the hook butt plate. The top of the stock is raised above the shoulder and neck to a level where the eye and rear sight are on the same plane. The firer now is able to keep his head erect but it may not solve the matter of looking straight through the sights.

2. The rear sight must be positioned directly in front of the right (sighting) eye. This may be accomplished by any of or a combination of the following methods:

a. mounting offset sights on the rifle,

b. Procuring a stock with a great amount of castoff,

c. canting the rifle.

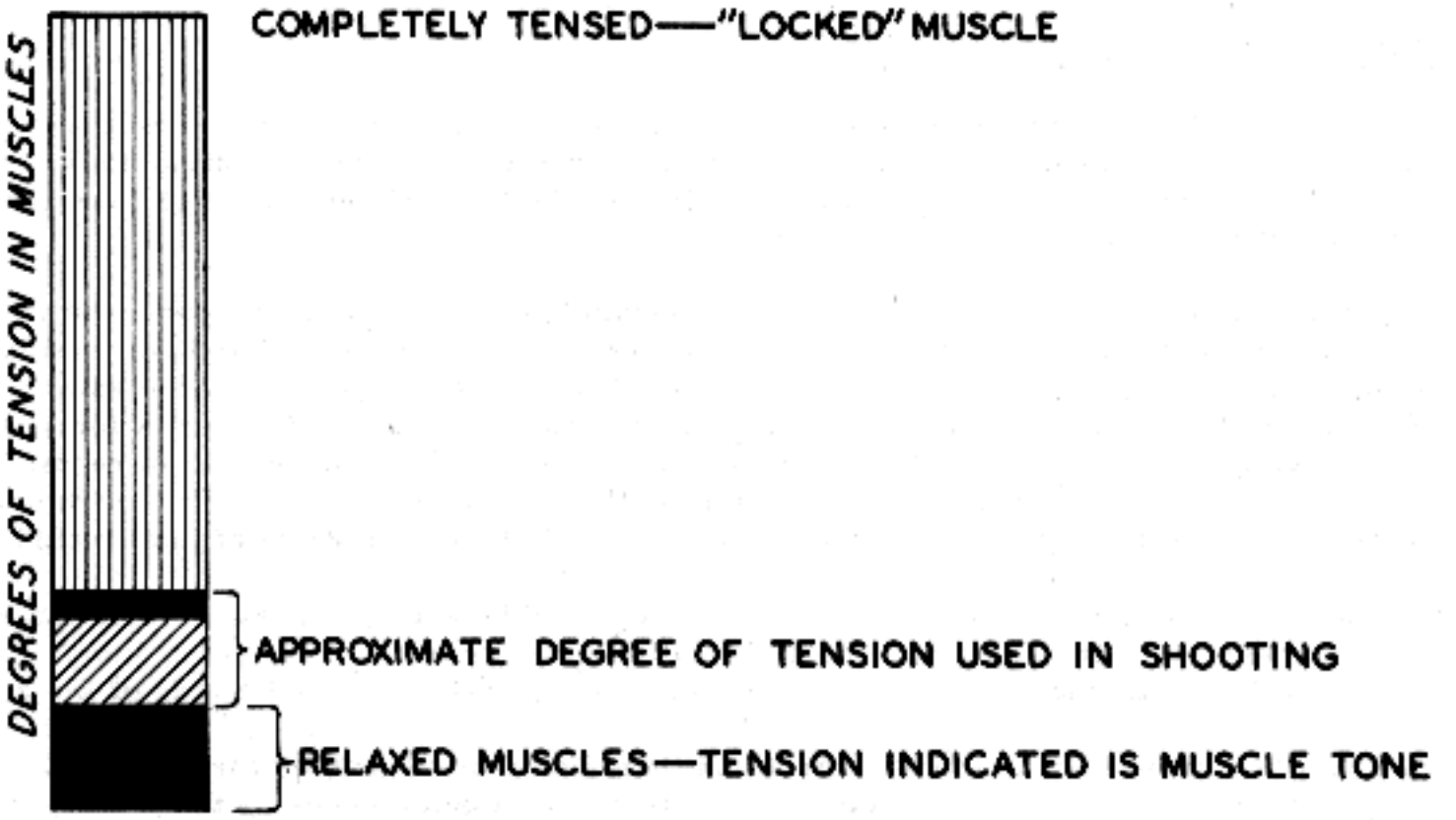

COMPLETELY TENSED—"LOCKED" MUSCLE
DEGREES OF TENSION IN MUSCLES
APPROXIMATE DEGREE OF TENSION USED IN SHOOTING
RELAXED MUSCLES—TENSION INDICATED IS MUSCLE TONE

Figure 21. Muscle tension.

(1) Canting the rifle is one method by which the shooter is able to achieve the proper sight alignment while retaining proper head position. This is true in any shooting position. The degree of cant is very critical. The amount of cant must be the same for each shot or the strike of the bullet will deviate greatly. The shooter should keep in mind that in adjusting sights to compensate for cant, a sight change in windage will also result in a change in elevation and vice versa.

(2) Cant can be measured by mounting a level bubble on the rifle. A shooter then will be able to observe his cant angle. After numerous hours of practice, almost instinctively the shooter will develop a uniform cant and the level bubble may not be necessary.

(3) It must be emphasized that shooting with a cant is not being taught as the proper procedure. If correct position will permit, the rifle should be held with sights perfectly vertical. Cant is merely an alternative for those shooters seeking a solution to a problem. If a problem does not exist, do not introduce one.

3. The position of the sight should result in the shooter assuming a natural upright head position. The sight should be adjusted to the head position, and not the head position to the sight. The importance of head position will be discussed again in later chapters.

H. EYE RELIEF.

1. The eye relief, or distance from the eye to rear aperture, should be approximately 2-6 inches, depending on the position (Figure 16). See Chapter III, The Integrated Act of Firing - The Eye and Sight System. How many rifle enthusiasts shoot the standing position with their head thrust forward in exaggerated manner that results in their eyebrow resting right up against the rear sight? TOO MANY?

2. Placing the sight against any part of the face or the shooting glasses will very possibly result in wear to the delicate sight assembly, or injury to the shooter from recoil (especially with a large caliber rifle). When the rifle is fired, a shooter can unconsciously develop a flinch as the sights repeatedly hit against the eye area. This can definitely produce a poor shooting position.

I. RECOIL AND THE ANGLE OF JUMP.

1. Every shooter is familiar with the recoil of a rifle. Simply stated, recoil occurs because expanding powder gases propel the bullet and the cartridge case in opposite directions. The bullet travels forward through the bore. The force applied to the base of the cartridge case is transmitted to the rear against the bolt.

2. If the rear of the bolt action were placed squarely against a solid support, the recoil of the barrel and action would be straight to the rear. However, the rifle barrel and bolt action normally rest on top of a wooden stock. The butt of the stock drops considerably below the axis of the barrel and bolt. Consequently, the rearward motion of the barrel and action tends to exert a force above the axis of the stock, causing the muzzle to be pivoted upward. This upward movement in recoil is called jump. The degrees of an arc described by the muzzle is called the angle of jump. For example, if the barrel jumped from the exactly horizontal to an absolute vertical plane, the angle of jump would be 90 degrees.

3. The angle and the direction of jump can be affected by external pressures on the rifle. A tight sling exerts a downward force on the muzzle of the rifle and lessens the angle of jump. In addition, the jump can be deflected to one side by a pressure exerted against the opposite side of the stock.

4. There are many technical considerations that should be accounted for in recoil. However, for purposes of this discussion, it is sufficient to say that recoil commences as the bullet starts to move. The gas pressure that causes recoil cease the instant the bullet leaves the barrel. No account is taken here of gas pressures on the muzzle face, or of the effects of inertia. It may be seen that since the bullet is moving in the barrel during recoil, a change in the angle of jump will place the muzzle at a different point as the bullet emerges. This would thus alter trajectory (and point of impact) of the bullet. This occurs even though the sights are perfectly aligned on the target at the time the weapon fires. A shooter should be concerned, then, that the angle of jump of the rifle remains constant throughout a shooting string. Otherwise, he will experience a change in zero.

5. In the standing position, slight changes in the angle of jump can be brought about by changes in the adjustment of the palm rest. These changes are usually very minor. However, in the other positions, changes in sling tension or changes in the position of the left hand can have a noticeable effect upon the angle of jump, and cause considerable changes in zero.

6. In all positions, a change in the position of the butt plate against the shoulder can cause a major change in zero.

7. Cheek pressure is also critical in affecting the angle of jump. If the cheek is moved forward or back on the stock, or if the cheek pressure is increased or decreased on the stock, there will be a noticeable change in the point of impact. This can occur in any position, and it occurs even though each shot may break with the sights in perfect alignment on the target. The shooter should take care to apply the exact same cheek pressure to the exact same point on the stock throughout a series of shots. Most good shooters rest the head naturally against the stock. They do not attempt to increase or decrease this natural pressure by use of the muscles. Experience will teach the shooter to sense unintentional changes in head position or cheek pressure. The shooter should attempt to hold the rifle in exactly the same way each time he fires during a string.

J. FOLLOW THROUGH.

1. Follow through is the act of maintaining hold and concentration until a shooter can no longer affect the flight of the bullet. Two methods of checking follow through are dry firing and having a coach load the shooter's rifle using dummy rounds periodically and checking the shooter's reaction as he fires the shot. By calling the shot the shooter anticipates the placement of his shot using the angle of jump, the appearance of his sight picture, and if outdoors any changes in the wind which may have occurred before the shot was fired. It is imperative that the shooter call the shot before looking through the scope, otherwise a false call may result.

2. The act of calling a shot is a very important aspect of shooting. By calling the shot the shooter can evaluate his zero, his ammunition, the value of the wind, and his performance. After learning to call shots, a shooter who observes a shot off call will not hesitate to find out why and make an adjustment. Usually an adjustment in the sights is necessary either by firing sighter shots or changing the sights from experience.

CHAPTER V

THE PRONE POSITION

A. GENERAL. As the accuracy of rifles and ammunition have improved and techniques have been refined, the scores fired in the prone position have skyrocketed. Every shooter must strive for perfect scores. Multi-position matches are seldom won at the prone but they can be lost there.

Prone obviously is the most stable of all the shooting positions. A shooter in the prone position has the benefit of very large support area and the position will be so steady that conscious body control will become a negligible factor.

B. ASSUMING THE PRONE POSITION. To assume a good prone position, the shooter lies facing between 5 and 15 degrees to the right of the line of fire to the target (Figure 23). The body is not twisted, but is stretched out and relaxed; the spine is straight (Figure 22).

C. POSITION OF THE LEFT LEG. The left leg is roughly parallel to the spine, with the toes pointing inward. The left heel should not be forced down to touch the ground. Pointing the toes outward is not recommended as this places a strain on the muscles of the left leg, and tends to roll the body to the right, resulting in too much body weight being placed upon the right elbow (Figure 23).

D. POSITION OF THE RIGHT LEG. The right leg is angled away from the spine at approximately a 45 degree angle. The knee is bent and the lower leg is roughly parallel with the left leg. The toes are pointed outward. The purpose for bringing the right knee forward is twofold: (1) to locate the right shoulder closer to the center of the position, (2) to facilitate easier breathing, which will in turn reduce pulsebeat (Figure 23). In the latter case, if the knee is brought to a 90 degree angle from the spine, the pressure of the body weight will be somewhat lifted from the chest and abdomen. However, with the leg at this 90 degree angle, too much pressure is placed upon the left elbow. Therefore the leg is moved back to the 45 degree area. The greatest variations of prone position will occur in the positioning of this right leg. The individual must experiment to find how much knee bend is desirable in his own case.

E. POSITION OF THE LEFT ARM. The left elbow should be slightly to the left of the rifle (Figures 25 and 26). Placing the elbow under, or to the right of the stock, strains the muscles of the upper torso. The left hand and wrist should be straight and the fingers do not grasp the rifle. The stock is placed well over the heel of the hand and not positioned towards the base of the fingers. The left forearm in international competition is required at a 30 degree angle with the ground. For most shooters this angle provides approximately 6 inches between the shooter's wrist and the ground. The position of the fore-end stop is determined by the length of the shooter's arms and the length of the butt of the rifle. Exact placement is left to the individual to determine for himself. A general guide is to start with the distance from the trigger to the butt being equal to the distance from the trigger to the fore-end stop.

F. ADJUSTING THE SLING. The sling may be high or low on the arm (see Chapter IV - Figure 19) and adjusted so that it supports the weight of the rifle. No effort should be made to hold up the rifle with the left hand and forearm. The left hand should be snug against the fore-end stop. The sling on the arm is a prime source of pulsebeat. One should find the area on his arm where the placement of the sling will result in the minimum of pulsebeat.

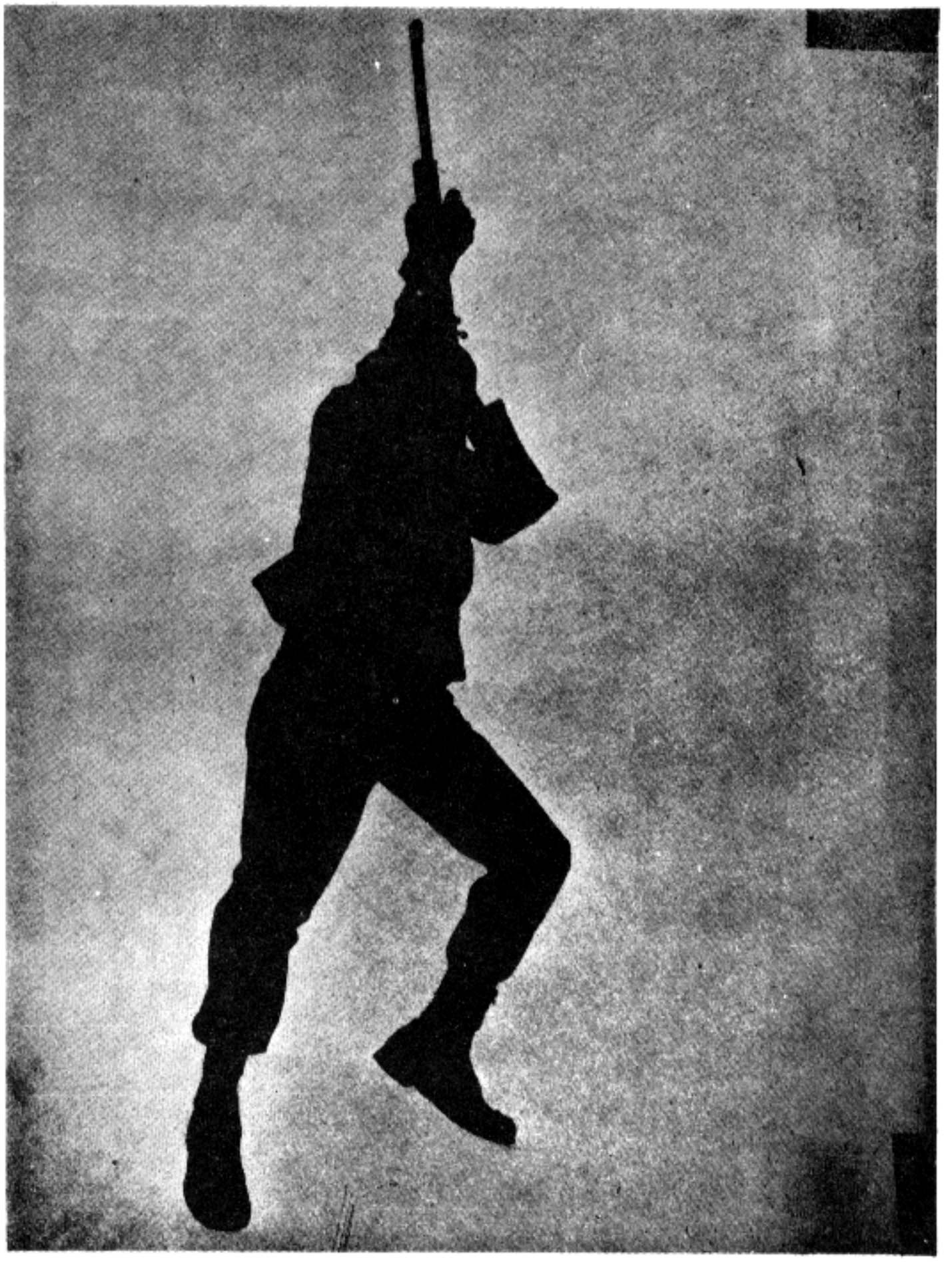


Figure 22. Prone position.

G. POSITIONING THE RIGHT ARM. The right elbow is placed a comfortable distance away from the body (Figures 22 and 23). If an attempt is made to bring the elbow in too close, the right shoulder will be raised to an uncomfortable height and an unstable position will result. The right hand may grip the stock with any degree of pressure that is desired by the shooter. The important point being that the pressure be consistent for each shot. The thumb may be over the top of the stock or along side of it. No attempt should be made to guide the rifle with the right hand! The positioning of the finger on the trigger is also shooter preference. The trigger finger should be clear of the stock so that when pressure is applied to the trigger it is not also applied to the stock (Figure 28).

H. POSITIONING THE RIFLE. The butt plate should fit snugly into the shoulder. With many shooters the butt will be placed low in the shoulder and, in order to achieve maximum rifle-shoulder contact, the adjustable butt plate will be raised on the stock. The matter of greatest importance in placing the butt into the shoulder is that the rifle be located the same place for every shot. Some shooters find that using a hook butt plate will help them accomplish this.

I. POSITIONING THE HEAD. The stock of the rifle should be so constructed that when the shooter is in position and places his head on the stock, he is looking through the sights (Figure 24). Some shooters apply more facial pressure against the stock than others. Again, the important point is that the facial pressure be CONSISTENT! The head should be as erect as possible and proper eye relief maintained (see Chapter IV).

J. ORIENTING THE POSITION. The prone position is so steady that it may be said to have a single point of aim. The position should be oriented so the natural point of aim is directly in the 10-ring. Small changes in the point of aim can be affected in several ways. Small horizontal changes may be made by moving the right foot to the right or left. Very fine elevation changes can be made with breath control. Major changes should be made by reorienting the entire position or readjusting the sling, fore-end stop, and butt plate. As in all the other positions, changes and experiments should be conducted carefully, and their effects closely noted. Too many changes, too often, can be very detrimental.

Figure 23. (Shooter I).

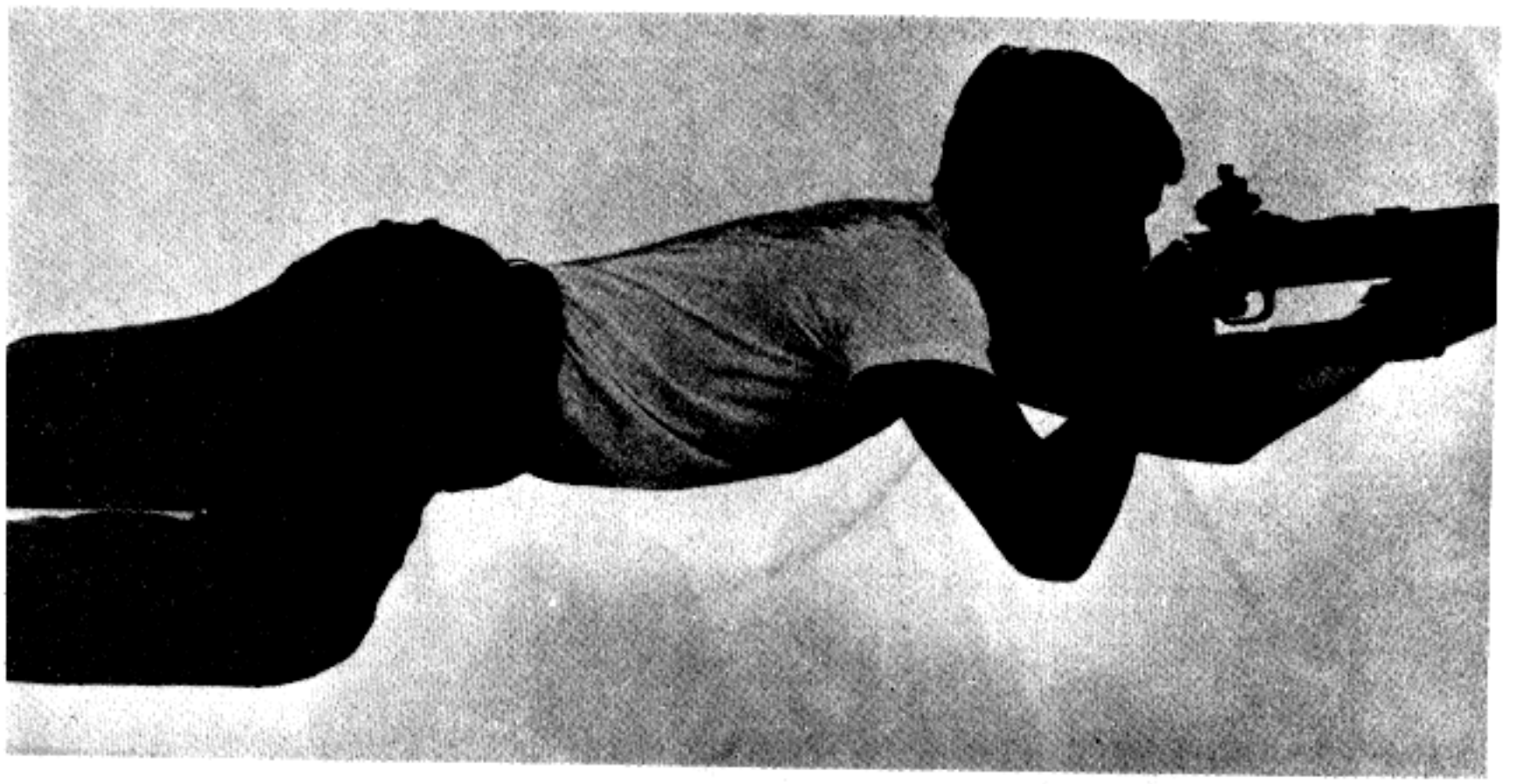


Figure 24. (Shooter I).

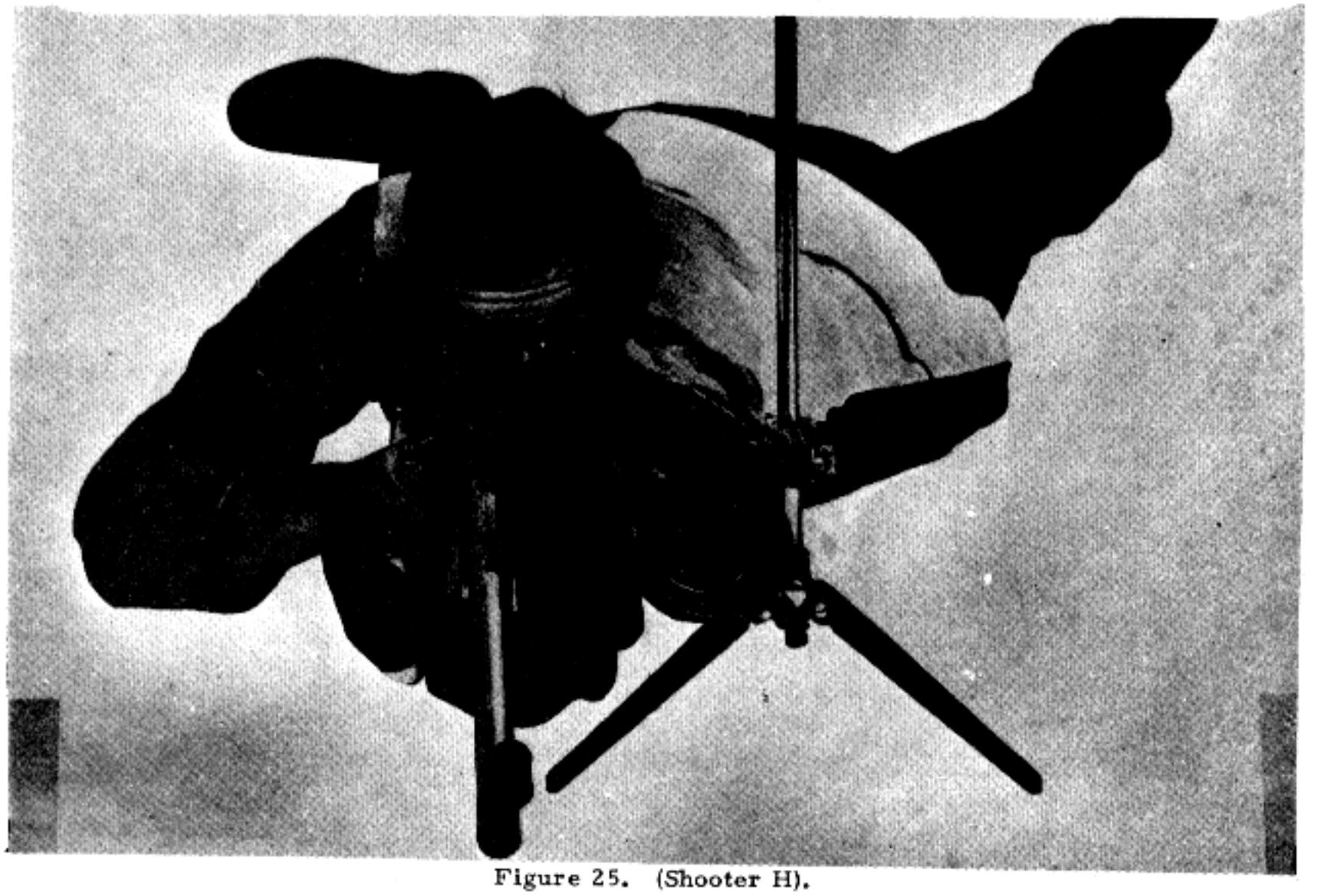


Figure 25. (Shooter H).

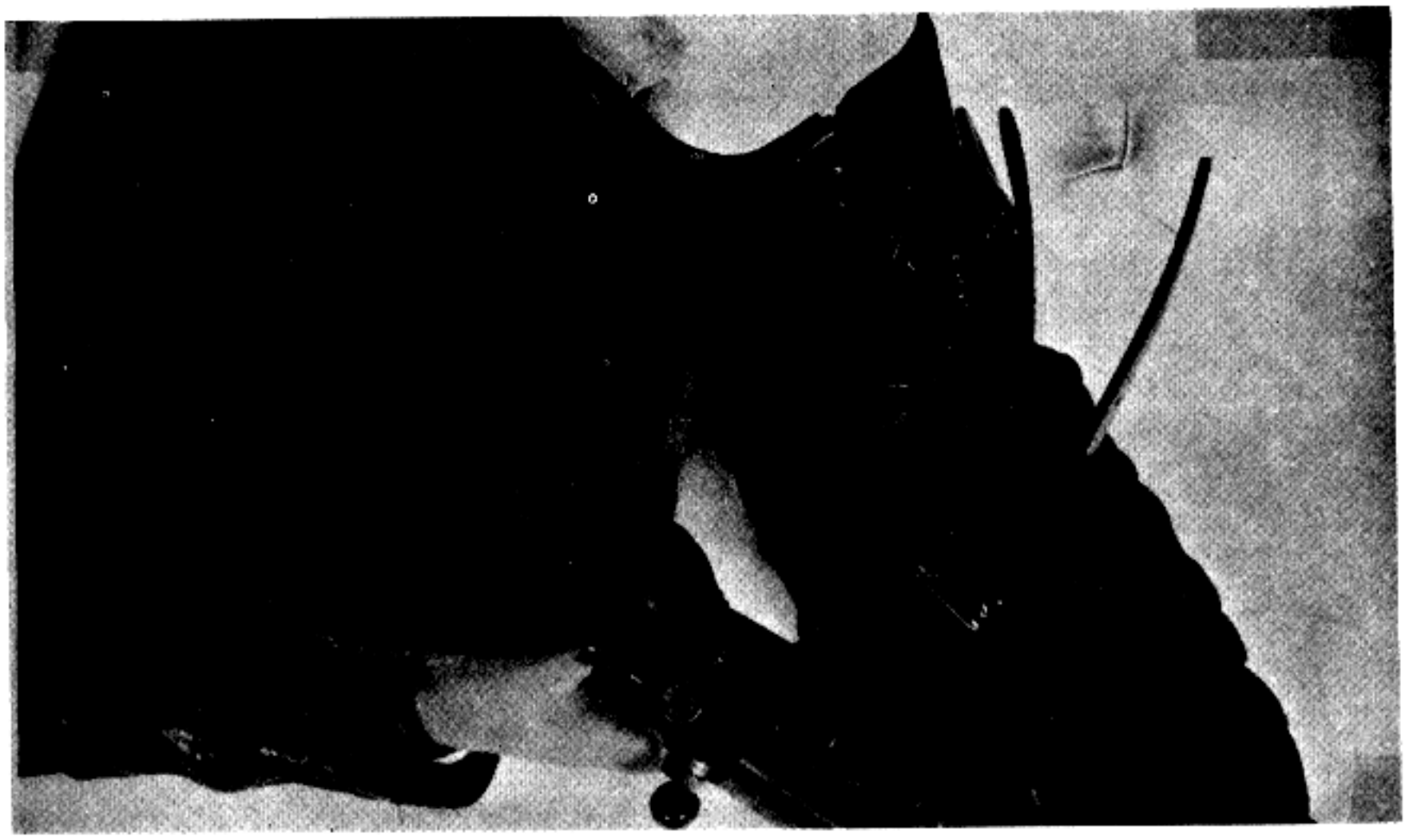


Figure 26. (Shooter L).

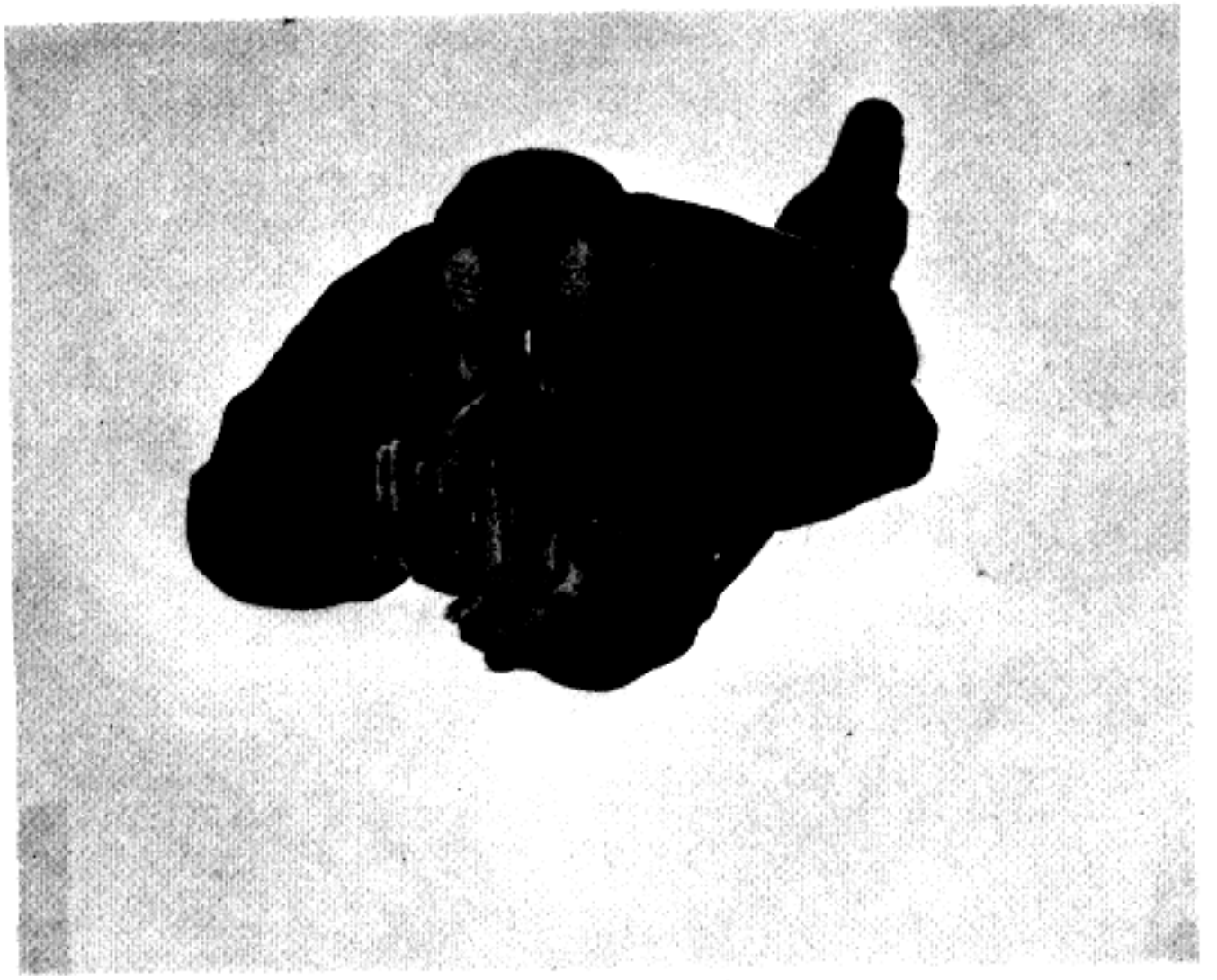


Figure 27. (Shooter D).

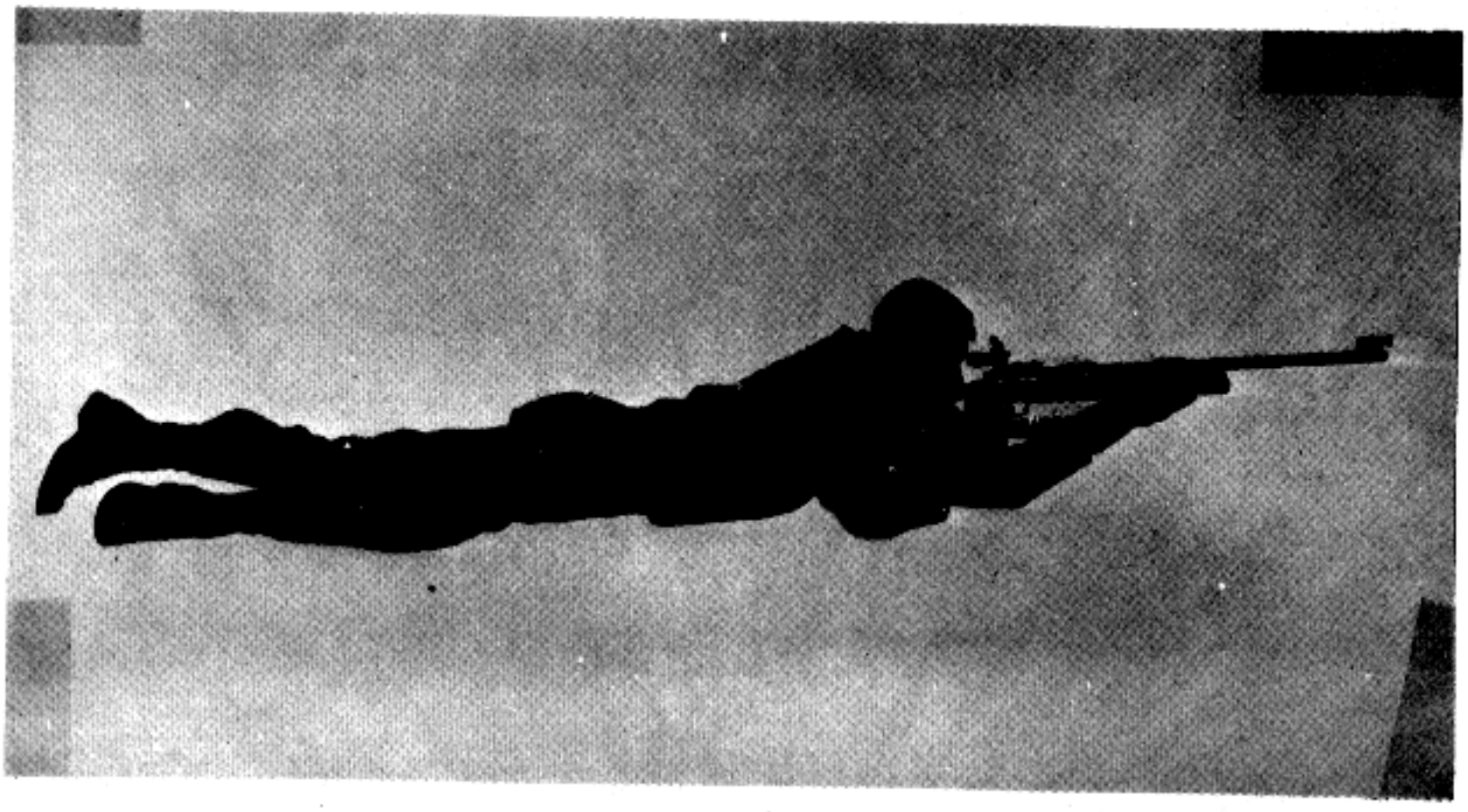


Figure 28. (Shooter A).

Figure 29. (Shooter D).

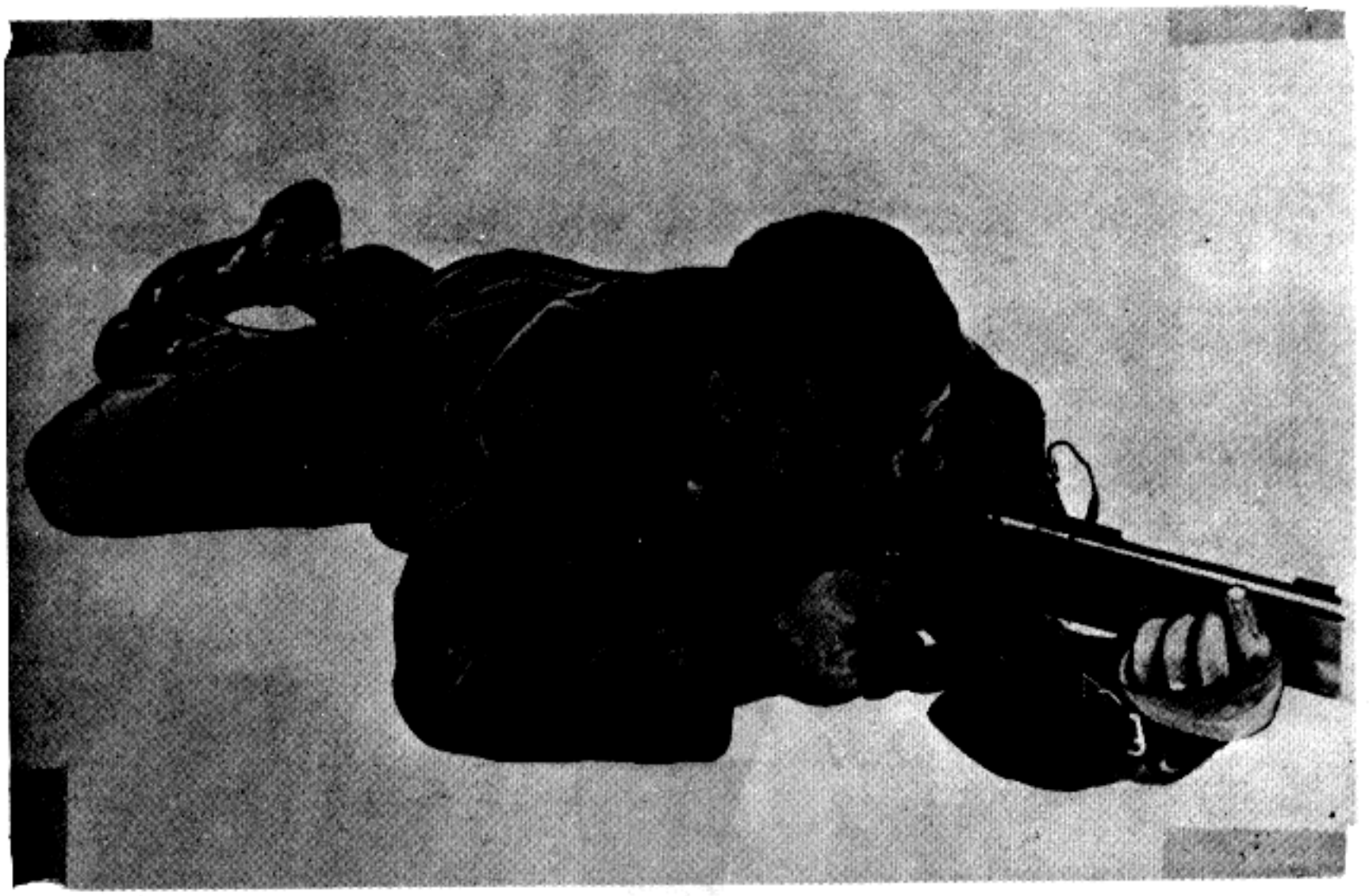


Figure 30. (Shooter K).

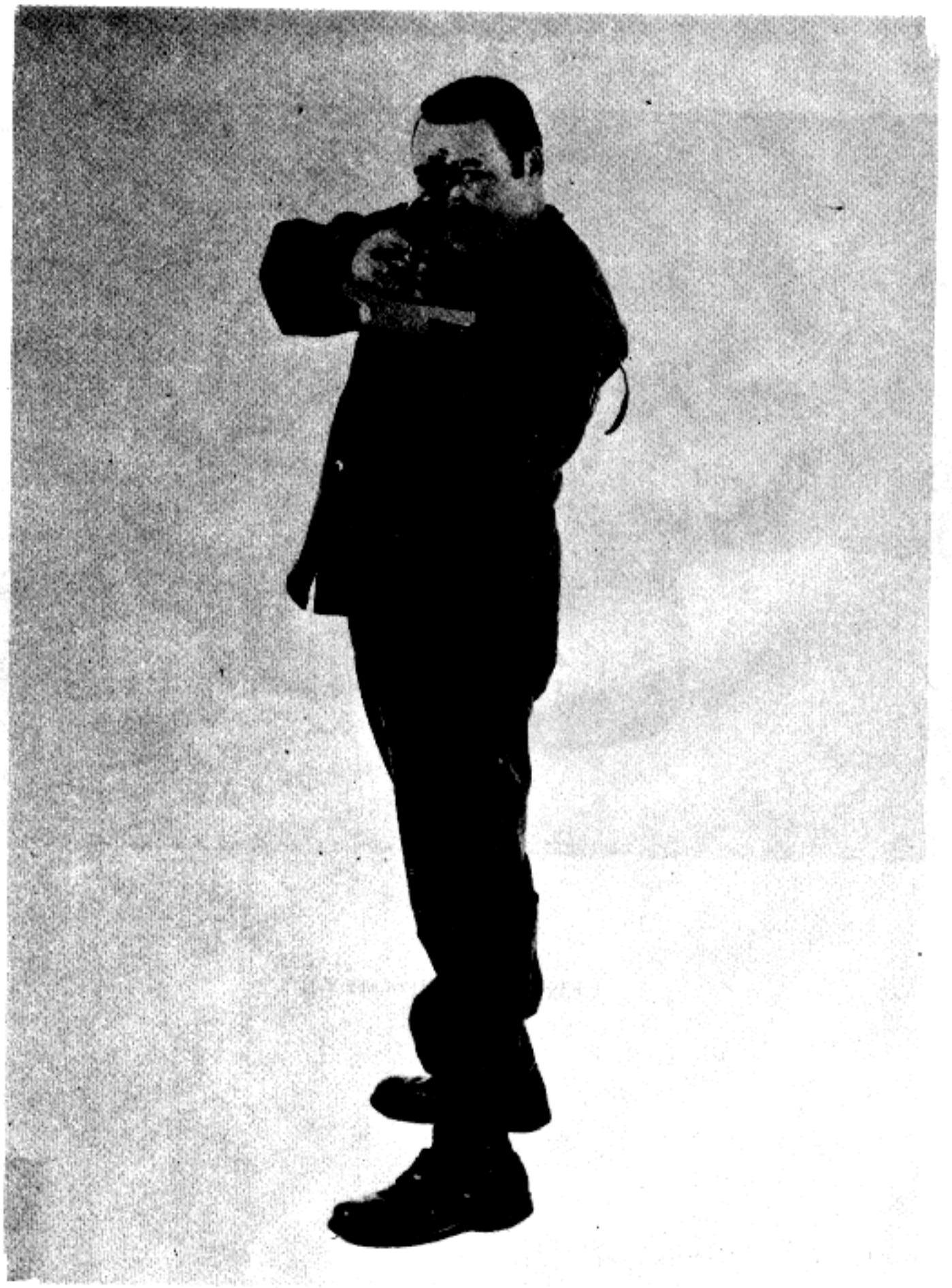


Figure 31. Standing position (Shooter L).

CHAPTER VI

THE STANDING POSITION

A. GENERAL. If you compile a list of the worlds best three position shooters and also one of the best standing shooters, you will notice that the names, and for the most part the order, of the two lists will be identical. If there are any reliable constants in shooting one would be that, "matches are won in the standing position." Good prone and kneeling scores are mainly a function of position refinement, while standing is equally dependent upon position and technique. Once a person has developed a good prone or kneeling position his hold is near ten-ring and his score is a function of his hold. In standing, position refinement is perhaps only 60% of the total problem, leaving a major portion to concentration, trigger control, and mental discipline.

B. POSITION OF THE FEET. In building a stable standing position, a shooter faces approximately 90 degrees to the right of the target (Figure 31). His feet are about shoulder width apart (Figure 32). The shooter's feet are his only support areas. Therefore, he should take full advantage of the support that is available. Equal distribution of weight is desirable, but tests prove that this is almost impossible to maintain. Most shooters, depending upon their position, will have slightly more weight on one of their feet than they will the other. To place more than 65 percent of the supported weight on one foot is not recommended. Also, some shooters find that their comfortable and stable foot positions to be slightly less than shoulder width (Figure 33). Other shooters have had fine results with the feet spread wider apart (Figures 34 and 35). The feet should point straight ahead in relation to body position. One or both feet may be turned slightly outward. The legs should be straight. However, the knees should not be locked tight.

C. FUNCTION OF THE BACK BEND AND BODY TWIST.

1. General Provisions: Once the proper foundation is constructed, the center of gravity of the rifle-body structure must be positioned so as to take full advantage of it. This is accomplished through the employment of the back bend and body twist (Figures 36 and 37). The shooter places the rifle to his shoulder, muzzle elevated about 70 degrees, and bends backward at the waist, keeping the legs straight. Then he twists the torso from the small of his back and lowers the left elbow until it contacts the side of the body and the rifle is pointing at the target (Figure 38). If he properly maintains his bend and twist, the weight of the rifle will feel as though it is resting upon his chest (Figure 39). This combination of back bend and body twist is the most important feature of the standing position! Considerable discomfort is common to the individual that assumes this position the first few times. It can take as long as a month of daily practice to strengthen the muscles of the body to compensate for the fatigue generated in the areas of strain.

2. Achieving a State of Balance: The shooter's back is bent to the right and rearward to gain bone support. If the shooter should stand straight, the weight of the rifle would pull his body to his left front. He would experience strain in the muscles of his back in an effort to keep his body from falling forward. By bending back and to the right, he shifts the weight of his body to the right rear of his feet. At a certain point, the weight of his body to the right rear of his feet equals the weight of the rifle to the left front. The body-rifle structure then reaches a state of balance, with the center of gravity directly above a point between the feet (Figures 39, 40 and 41). The shooter is relieved of the strain to the muscles of the back that keep his body from falling toward the weight of the rifle.

3. Body-Rifle Weight Supported by Bone Structure: As a result of this back bend and body twist, the weight of the rifle and upper torso falls upon the bones of the lower spinal column. Hip and leg bones transmit this weight ultimately to the feet. Thus the weight of the rifle is almostly completely supported by bones. The only work required of body muscles is to keep the body in a standing posture and prevent it from swaying from its point of balance.

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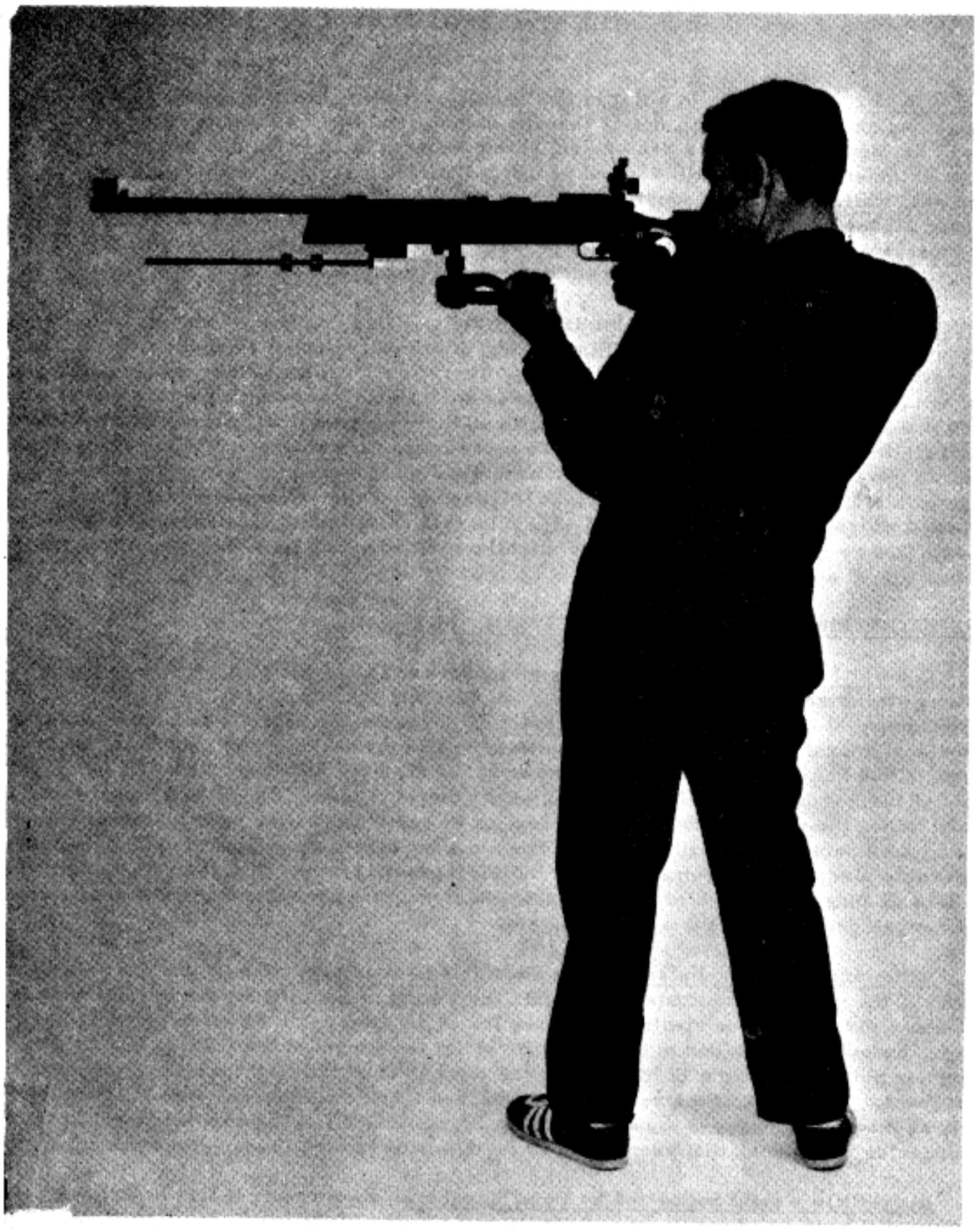


Figure 32. (Shooter B).

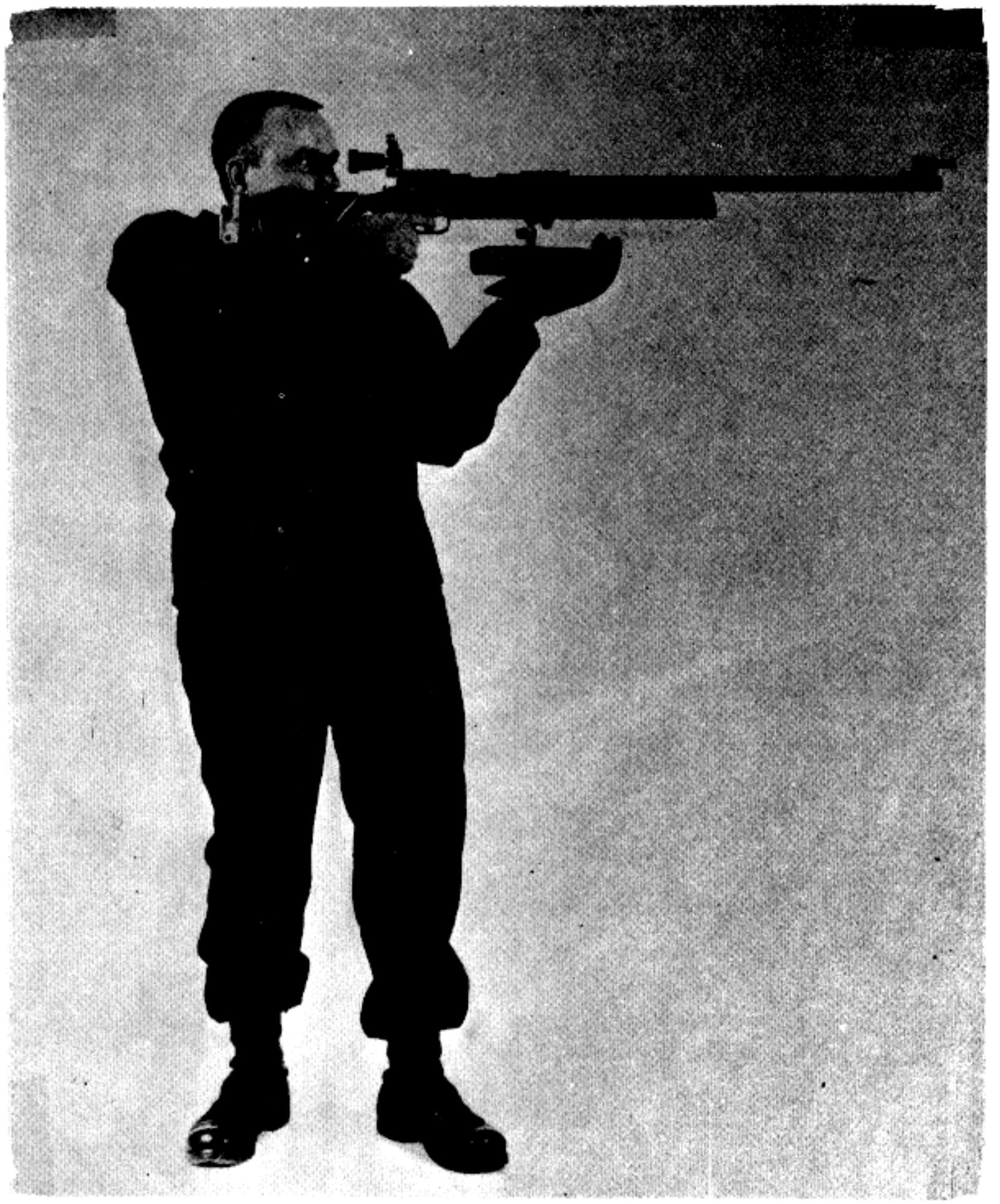


Figure 33. (Shooter D).

Figure 34. (Shooter L).

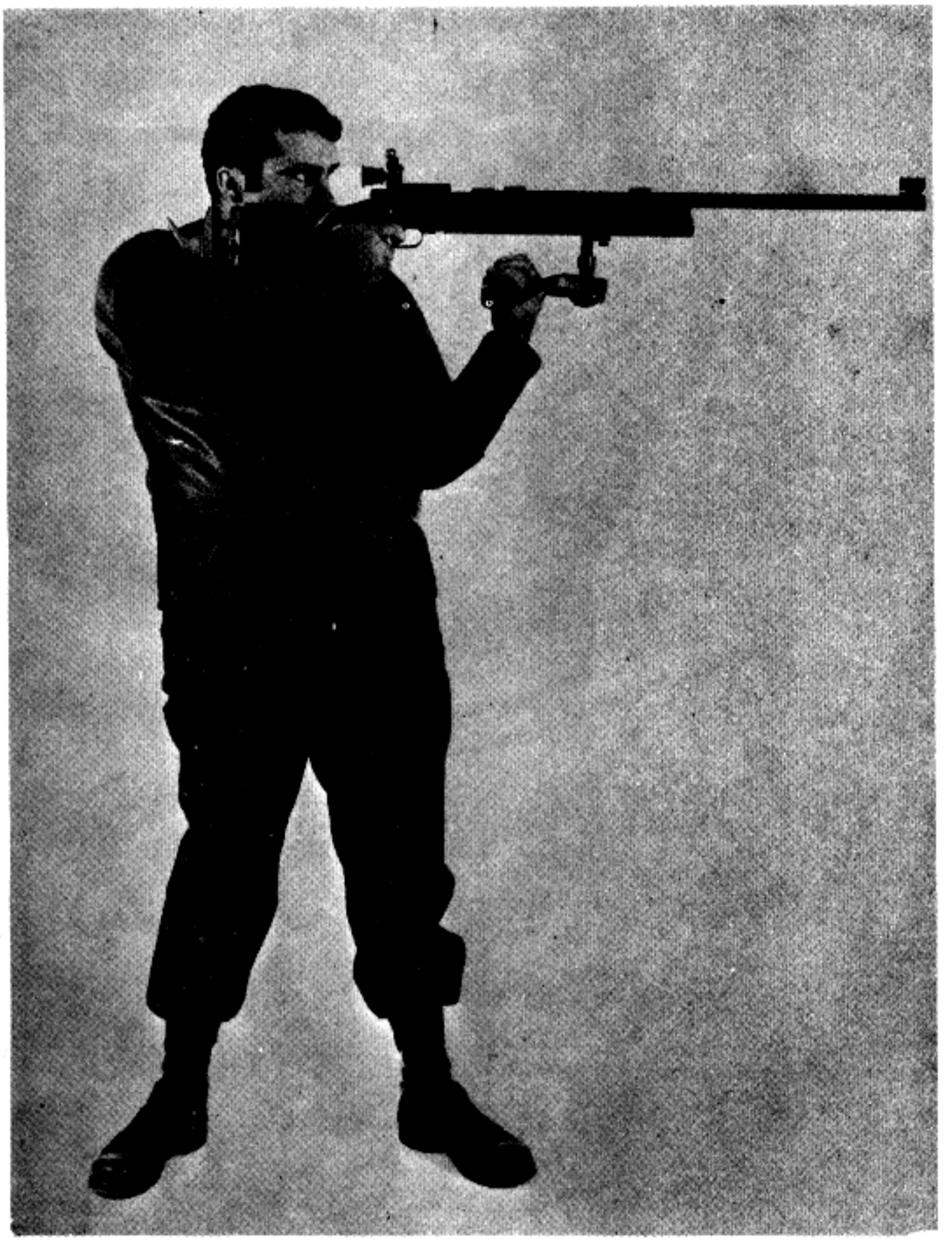


Figure 35. (Shooter K).

Figure 36. (Shooter A).

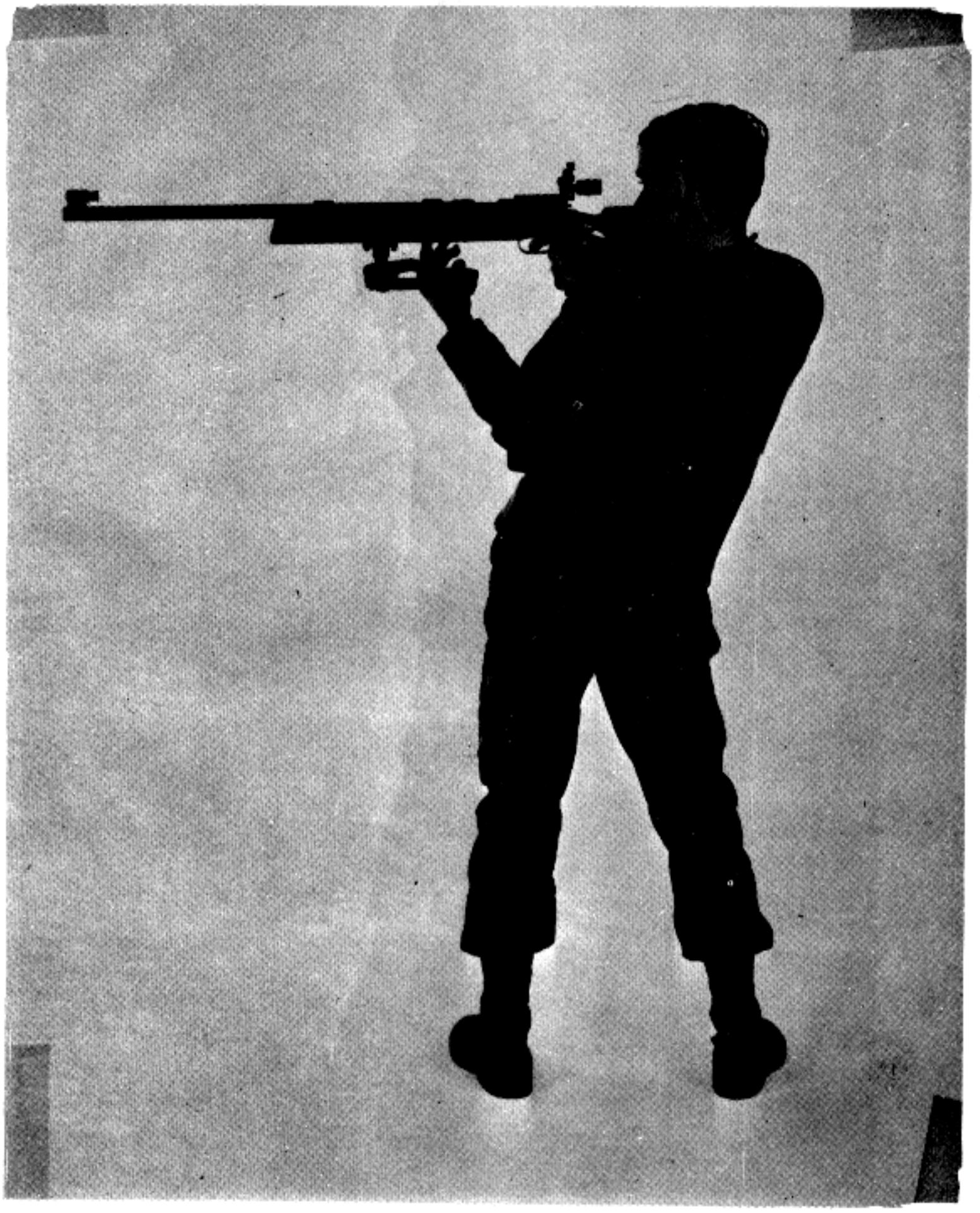


Figure 37. (Shooter I).

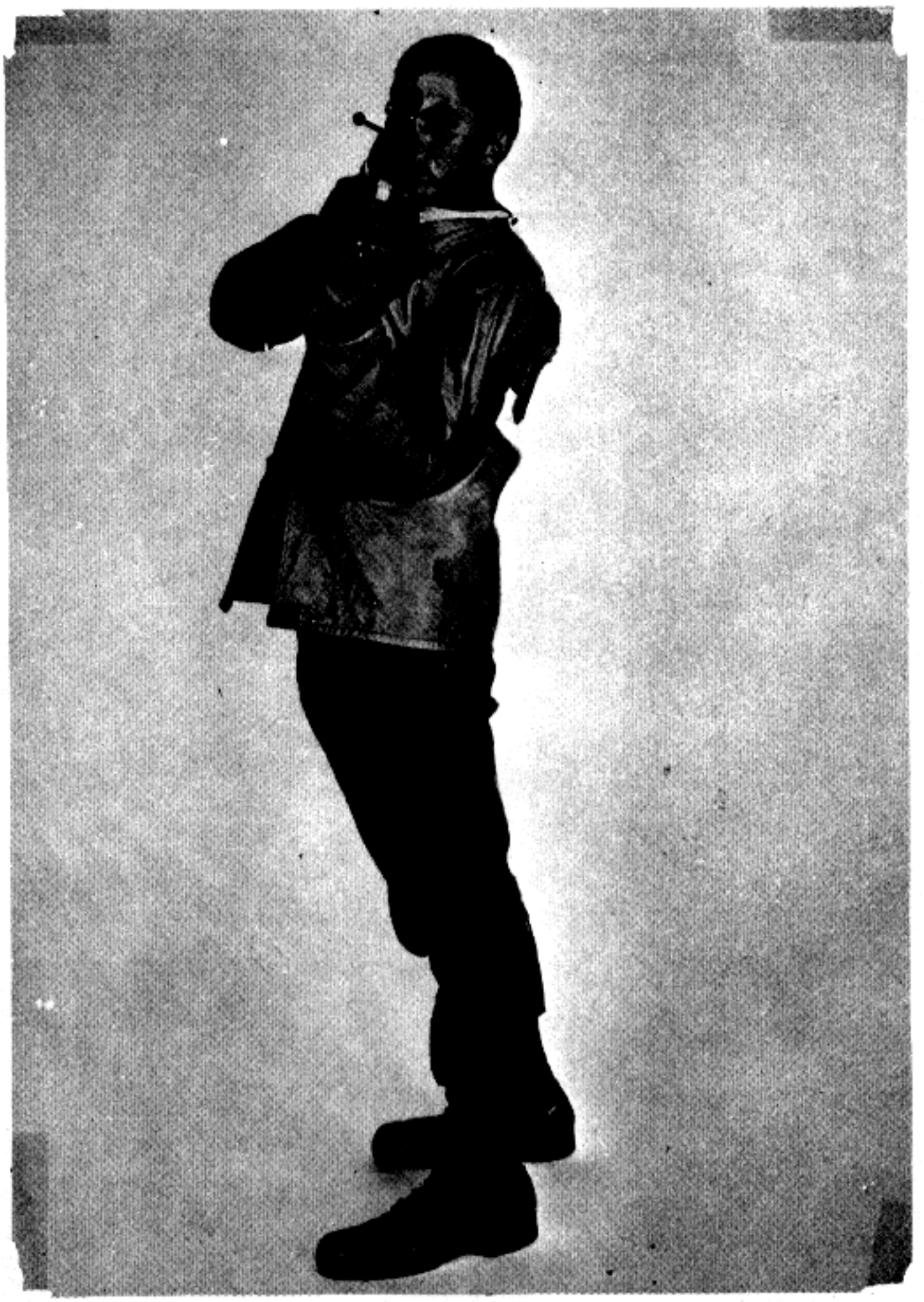


Figure 38. (Shooter M).

D. POSITION OF THE LEFT ARM.

1. The Upper Arm: The shooter's left upper arm rests against the left rib cage (Figure 42). Supported by the ribs, the bones of the left forearm form a bracket that supports the rifle. The butt hook under the right armpit prevents the rifle from falling forward from the weight of the barrel (Figure 43).

2. The Elbow: If the shooter lifted his left elbow away from his left side, he would be "holding" the rifle up with the muscles of his left arm and shoulder. He can lower his elbow to rest against the rib cage (Figure 44). In some cases the elbow may rest on the hip bone. Thus, the bones will provide a major portion of the support of the rifle for him.

3. The Forearm: The left forearm that supports the rifle is not completely rigid. But like the body, the left forearm can be placed in a point of balance. If the muscles of the left hand function properly, it can be held at this point of balance without moving. Also like the body, it can be held in balance with a very slight, almost relaxed, muscular tension. It is at this point of balance that the shooter should place his left forearm. He should avoid using the muscles of the left arm to steer the rifle into the 10-ring.

E. POSITION OF THE HEAD. The head should be in an upright position, with the eyes looking straight forward out of the sockets and through the sights (Figures 45, 46, 47 and 48). If the head is tilted, the organ of balance, located in the inner ear senses that part of the body is tilted and automatically sends out signals to correct the imbalance. Consequently, the body experiences a slight involuntary sway. In order to keep the head erect, it may be necessary to cant the rifles. However, it is essential that the angle of cant remain the same for each shot.

F. POSITION OF THE RIGHT ARM.

1. The Butt Hook: The butt hook should be comfortably under the right armpit, preventing the rifle from pivoting forward from the weight of the barrel. The hook is dropped to a level that will bring the stock up to the shooter's face and the eye will be looking naturally through the sight (Figure 49).

2. Degree of Tension: The right arm may be slightly tensed or completely relaxed. A few shooters lift the arm to some degree whereas others merely let it drop naturally to their side.

3. The Hand: The right hand should be comfortable and under no strain whatsoever. It should provide a straight trigger pull that is directly in line with the bore of the barrel. The trigger finger should not touch the stock in such a manner that pressure applied to the trigger also applies pressure to the stock (Figure 50).

G. FUNCTION OF THE PALM REST. The palm rest is used to bring the rifle stock up to the level of the face. Some shooters are able to accomplish this without the use of a palm rest. They simply support the rifle with the left hand. Others use only a small block of wood (Figure 51). The important point is that the correct position of the body is assumed and the rifle is fitted to the body, not the body to the rifle! The palm rest is positioned on the heel of the hand, and the left wrist is comfortable. The beginning shooter will find that correctly adjusting the palm rest and butt hook may prove to be a bewildering task. Part of this difficulty arises because he does not yet "know" his position. He has not used the standing position enough to be able to sense minor changes in body posture. Consequently, he will not know whether he has assumed the same position each time he fires. As a result, from time to time it will appear that the rifle is not adjusted.

H. THE AREA OF AIM.

1. General: The standing position is not limited to one point of balance and area of aim. Notice that the shooter can move the center of gravity of the body-rifle structure by a small movement of the left elbow and the rifle (Figure 52). He can then make a slight shift in the posture of the body and find a new point of balance. The rifle will then point in a slightly different direction than it did in the first point-of-balance position. It must be emphasized that the shift in the position can never be very great, or the entire bone support structure will lose its efficiency. But a small shift can safely produce a small change in the direction of aim if no strain is incurred in the body.

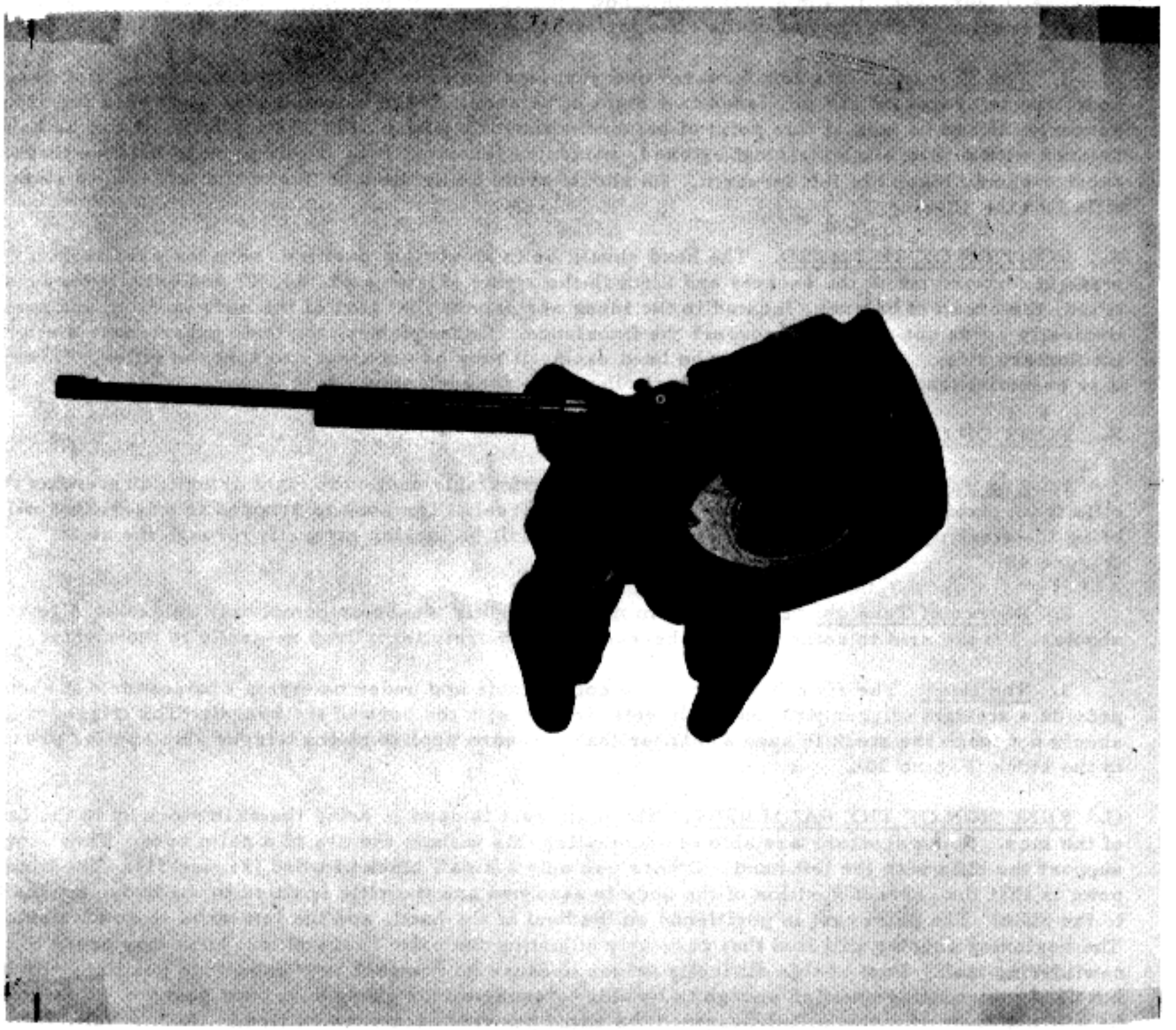


Figure 39. (Shooter C).

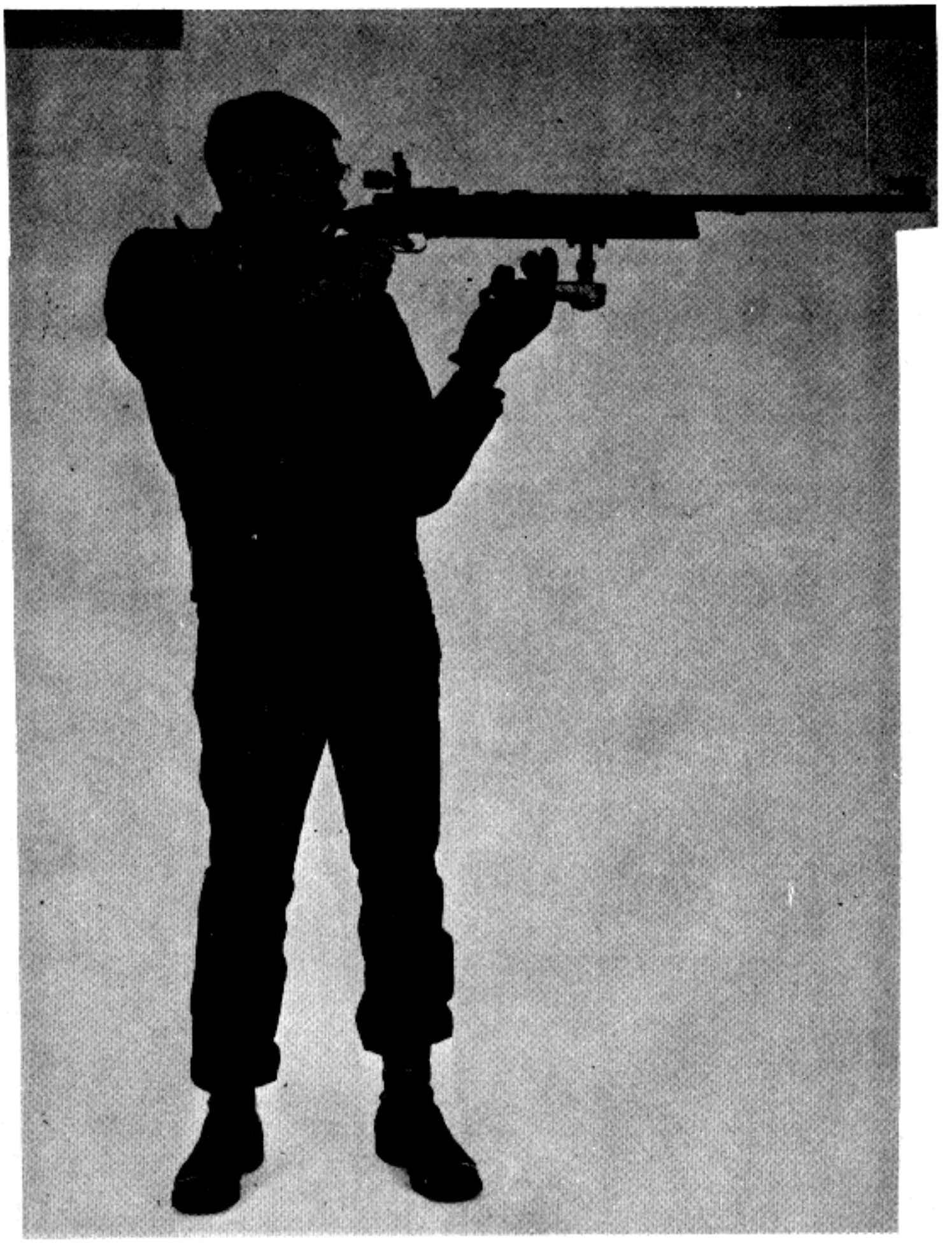


Figure 40. (Shooter J).

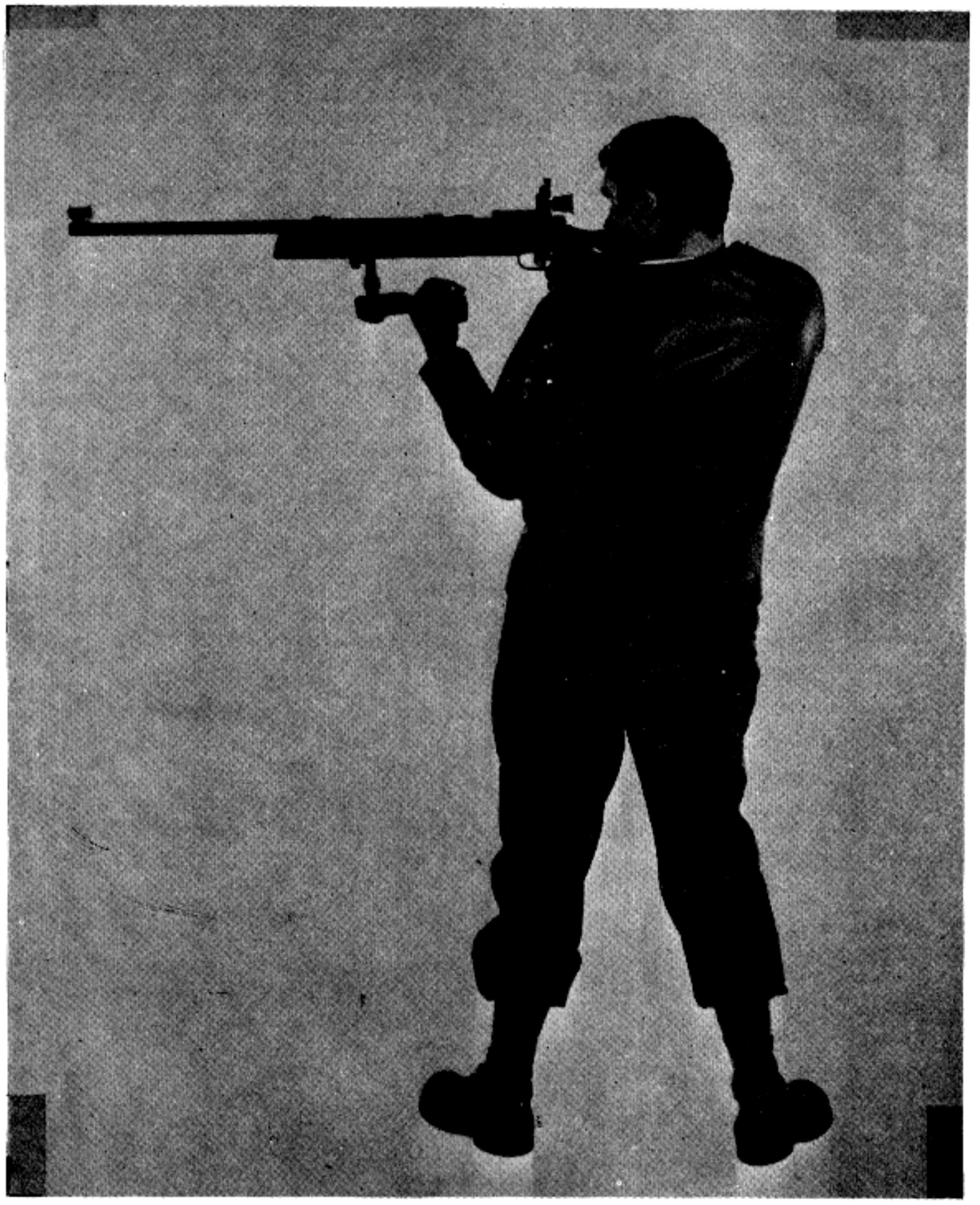


Figure 41. (Shooter K).

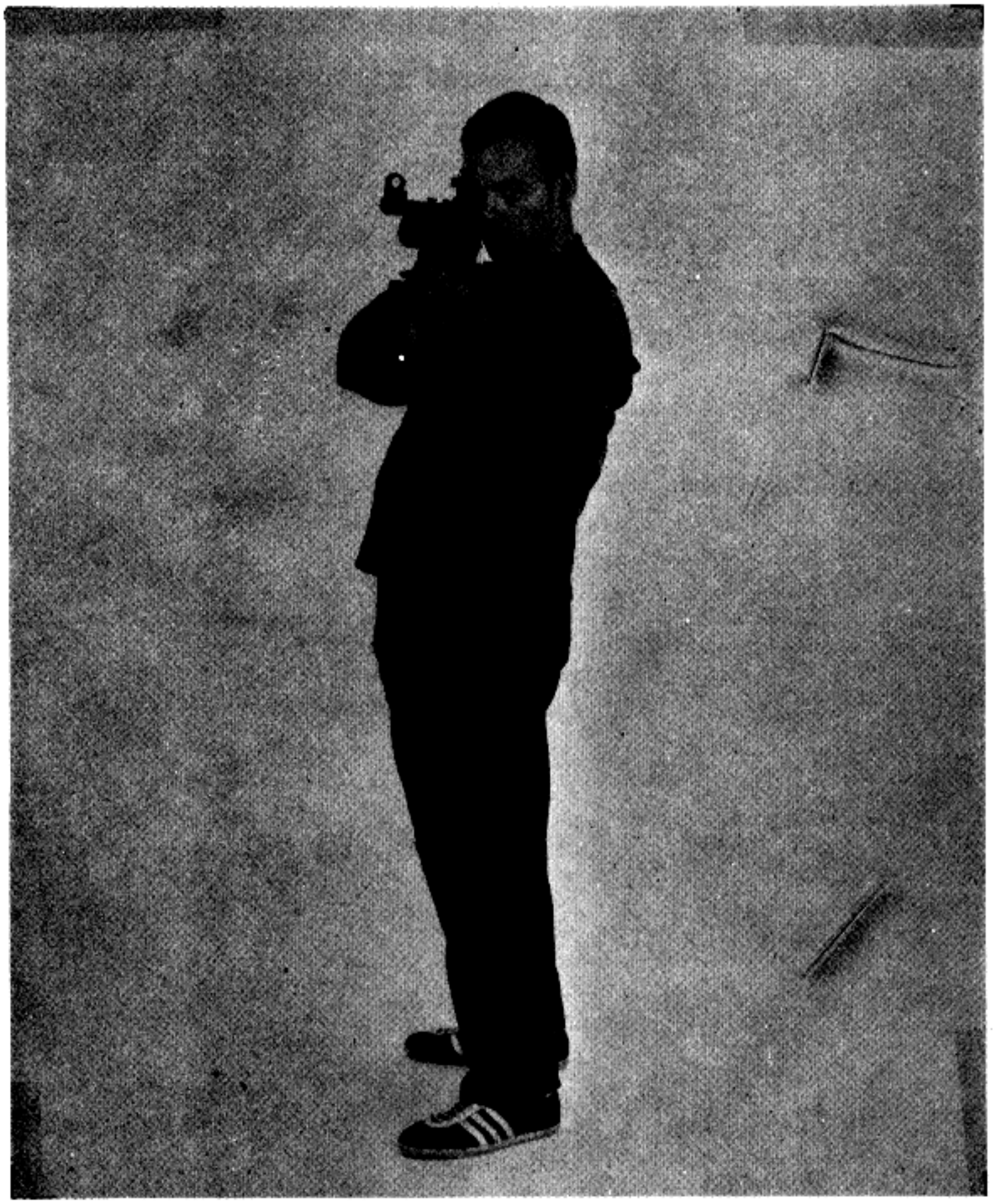


Figure 42. (Shooter B).

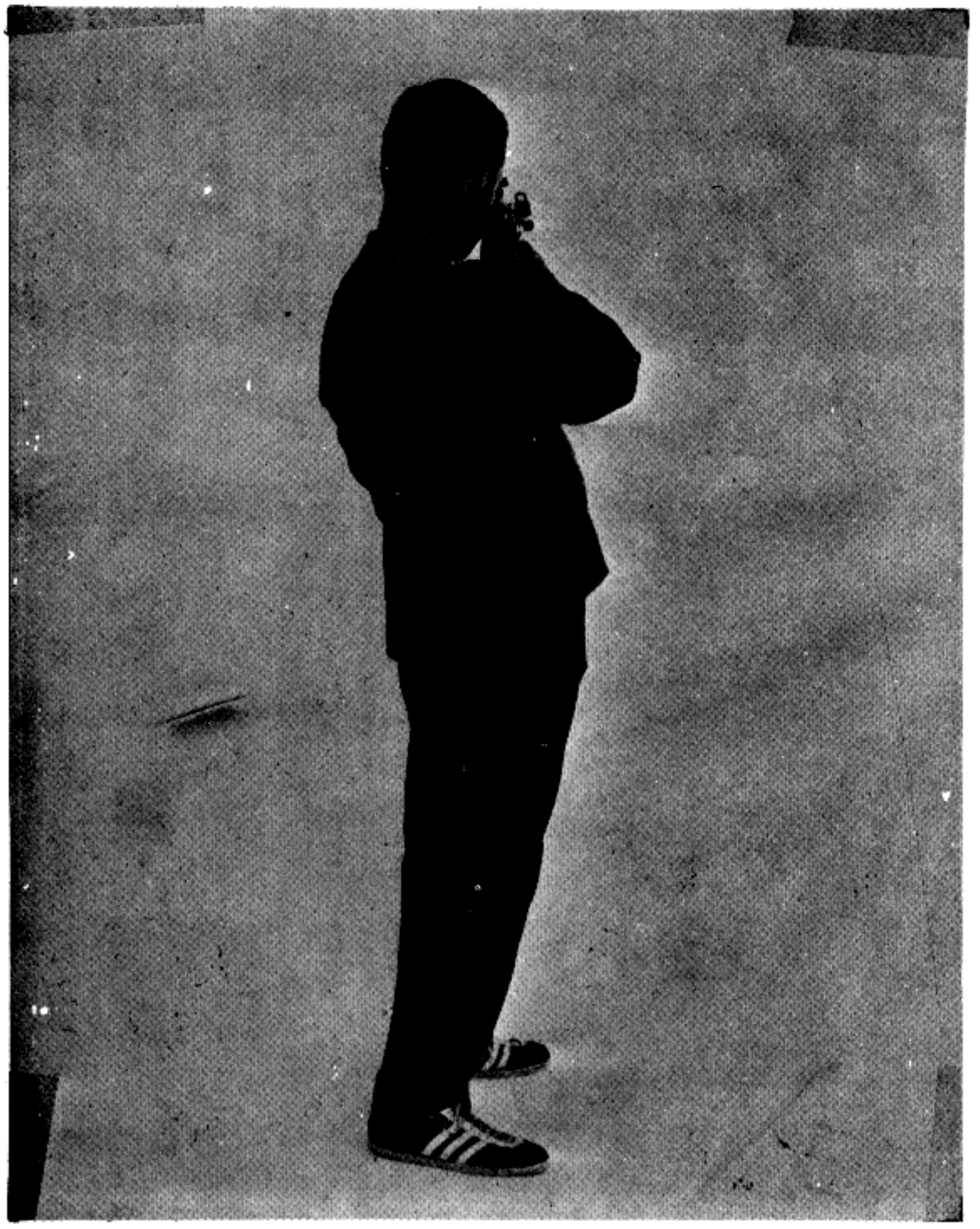


Figure 43. (Shooter B).

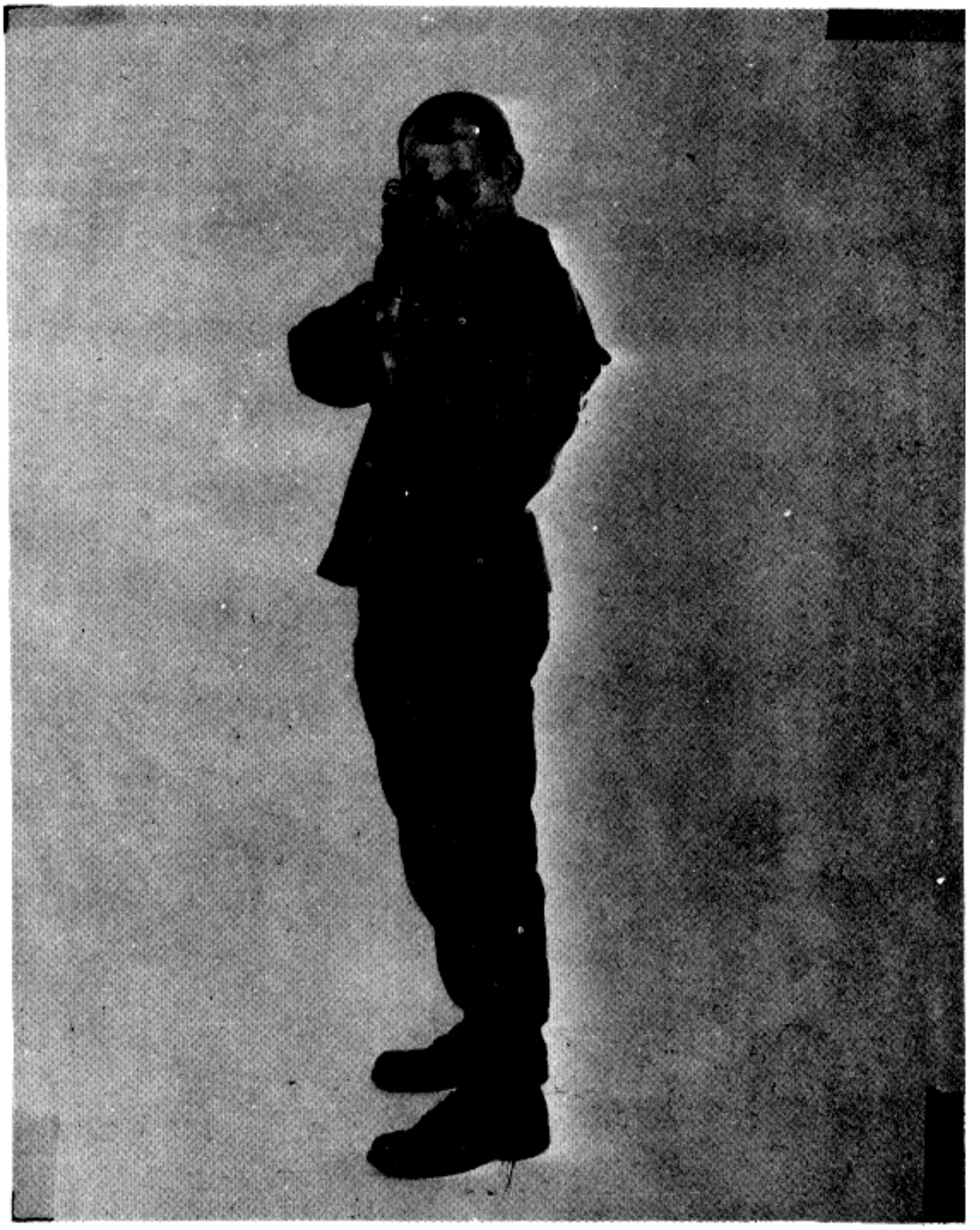


Figure 44. (Shooter F).

Figure 45. (Shooter I).

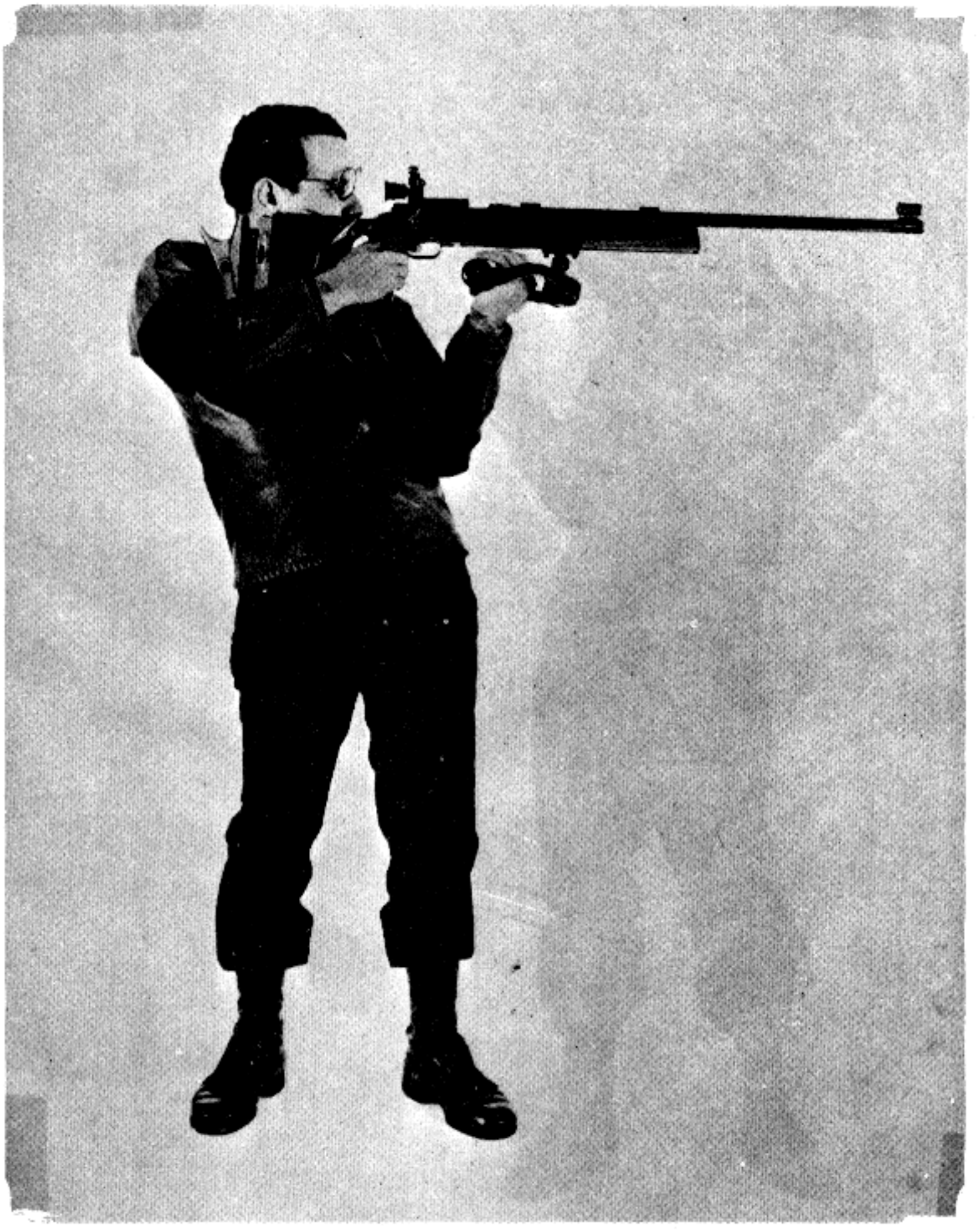


Figure 46. (Shooter E).

Figure 47. (Shooter A).

Figure 48. (Shooter L).

Figure 49. (Shooter I).

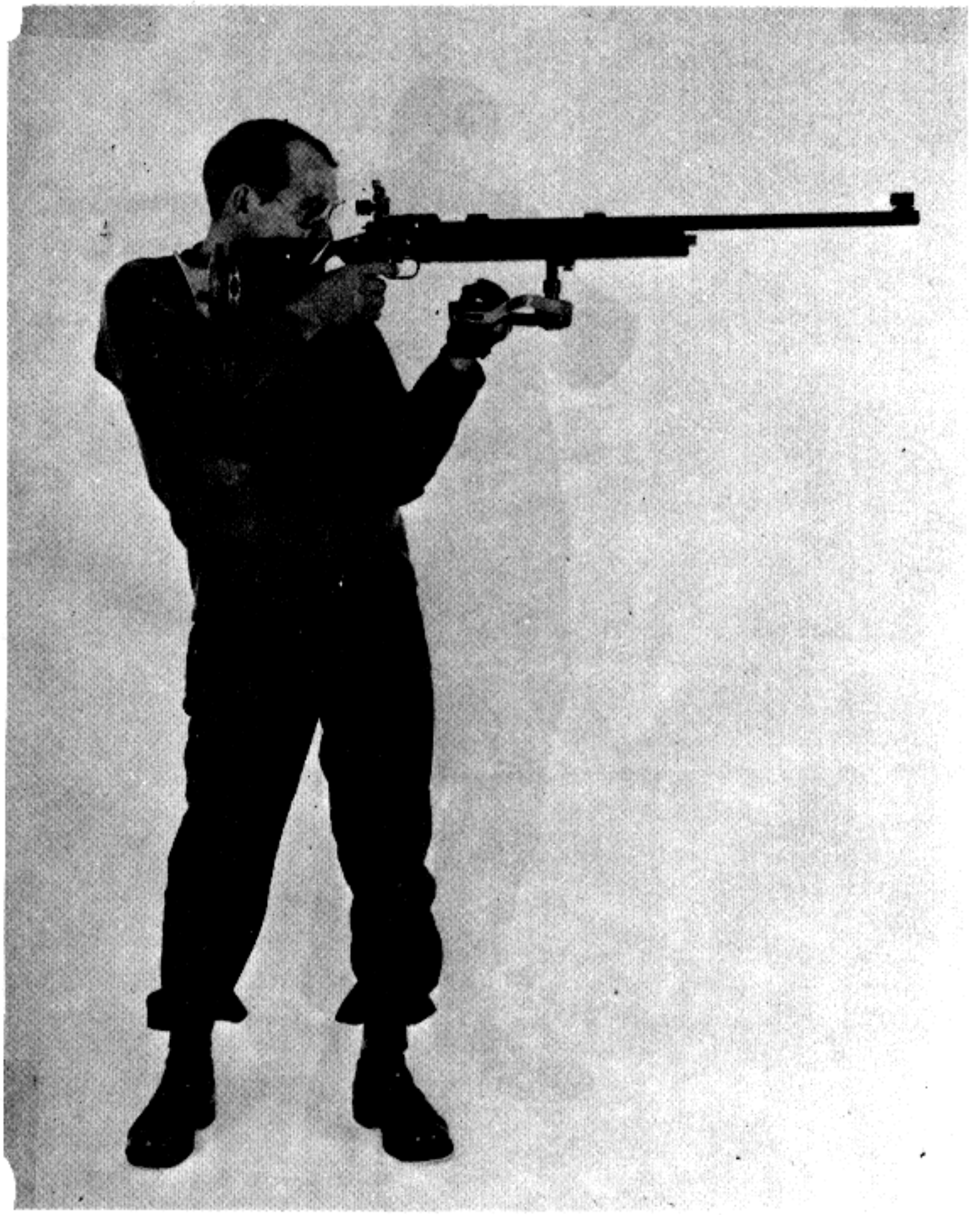


Figure 50. (Shooter F).

Figure 51. (Shooter C).

2. Natural Area of Aim: The standing position, then, does not have one single point of aim that is natural to the position (Figures 53 and 54). There is rather an area of aim that is natural of this position. The shooter must adjust his rifle positioning and the placement of his feet so that when he assumes the position, the target is within the area of natural aim. If he uses the muscles to force the rifle onto the target when the target is outside of the area of aim, he thus defeats the principle advantage of the position.

I. ADVANCED POSITION REFINEMENT.

1. Several years ago the ISU rules changed concerning shooting clothing. Its major effect on the shooters became evident when they had to change fromtheir heavy (10 millimeter) shooting coat to a light (2.5 millimeter) coat. The scores immediately dropped and have only recently risen to their former level.

2. Why Light Coat Scores Were Lower: In the heavy coat the shooter experienced a feeling of being "strapped in" to a stiff, well supporting coat. Transmission of heartbeat was all but eliminated. In standing one could actually lean up against the coat and let it reduce the movement. Not only did the coat reduce the hold greatly, but it also tended to maintain the hold after the shot was fired causing an almost "automatic follow through." When this tight heavy coat was replaced with a loosely fitting thin coat, all of these advantages were lost leaving the shooter with a poorer hold, a more unstable follow through and much anxiety over his drop in scores. Since our first exposure to this problem, many remedies have been tried, and although we are continuing to refine our knowledge in this area, we feel we do have some useful hints for the previously neglected light coat shooter.

3. Because these new developments are most critical in the standing position, we will center our discussion here. The major problem in light coat shooting is improving the hold by decreasing the body movement by means other than coat support. The only way this can be done is by refining the position in the light of reduced support from the coat. External rifle adjustments are so much a function of individual body conformation that a suggestion in this area is likely to be meaningless to most shooters. However, one adjustment trend has shown up among many of the top light coat standing shooters. The rifle is adjusted so that the palm rest is nearer the trigger guard and the stock is longer. This puts the hands closer together, reducing the tendency to make corrections with the hands and arms. The long stock, created by lengthening the butt plate, also gives the shooter a better hand position to control the trigger (Figure 55).

4. We have found that the only way to reduce movement without having to rely on the jacket is by stretching the muscles. It is best to stretch a muscle only enough to restrict its movement. Too much tension causes spasms - too little tension invites involuntary movement. One way to do this is by twisting the muscle, thereby constricting its movement. We have been doing this for many years kneeling by turning the left toe toward the right knee; this twists the muscles in the left leg, thus reducing movement. In standing, we are doing the same thing when we twist the upper body at the back which helps to immobilize the spine to reduce sway. By turning the upper body to the left the upper thigh muscles, especially of the right leg, become stretched; therefore, the more you turn to the left in relation to the placement of the feet, the more tension the thighs are under. At a specific point somewhere in this movement, the hold is the smallest. This is where the shooter stops and uses this position for maximum control.

5. The left elbow is placed under the rifle allowing the arm to become "locked" between the weight of the rifle and the hip. When this is done, the left arm and hand can be relaxed and do not forcefully hold up the rifle. One should remember that to relax a muscle not in use serves the same purpose as stretching one that is being used. Control is maintained.

6. By leaning forward a bit at the shoulders, the right half of the back becomes stretched. Once this area is stretched, the chance of having a shot drop low by tensing the back muscles is greatly reduced. Many of the best standing shooters lean their heads forward a bit on the stock (Figure 50). This serves to lock the head at a point on the stock. One should not tilt the head from side to side, however, as position balance may be lost.

7. Once the position is stable, the problem of follow through can be attacked. Since the light coat does not aid in follow through, the shooter must continue to hold through the recoil. This is not new to most shooters, but if all of your shooting has been in the heavy coat, it is doubtful if you have ever experienced true follow through. It is achieved through concentration and automation of techniques.

Figure 52. (Shooter K).

Figure 53. (Shooter J).

Figure 54. (Shooter L).

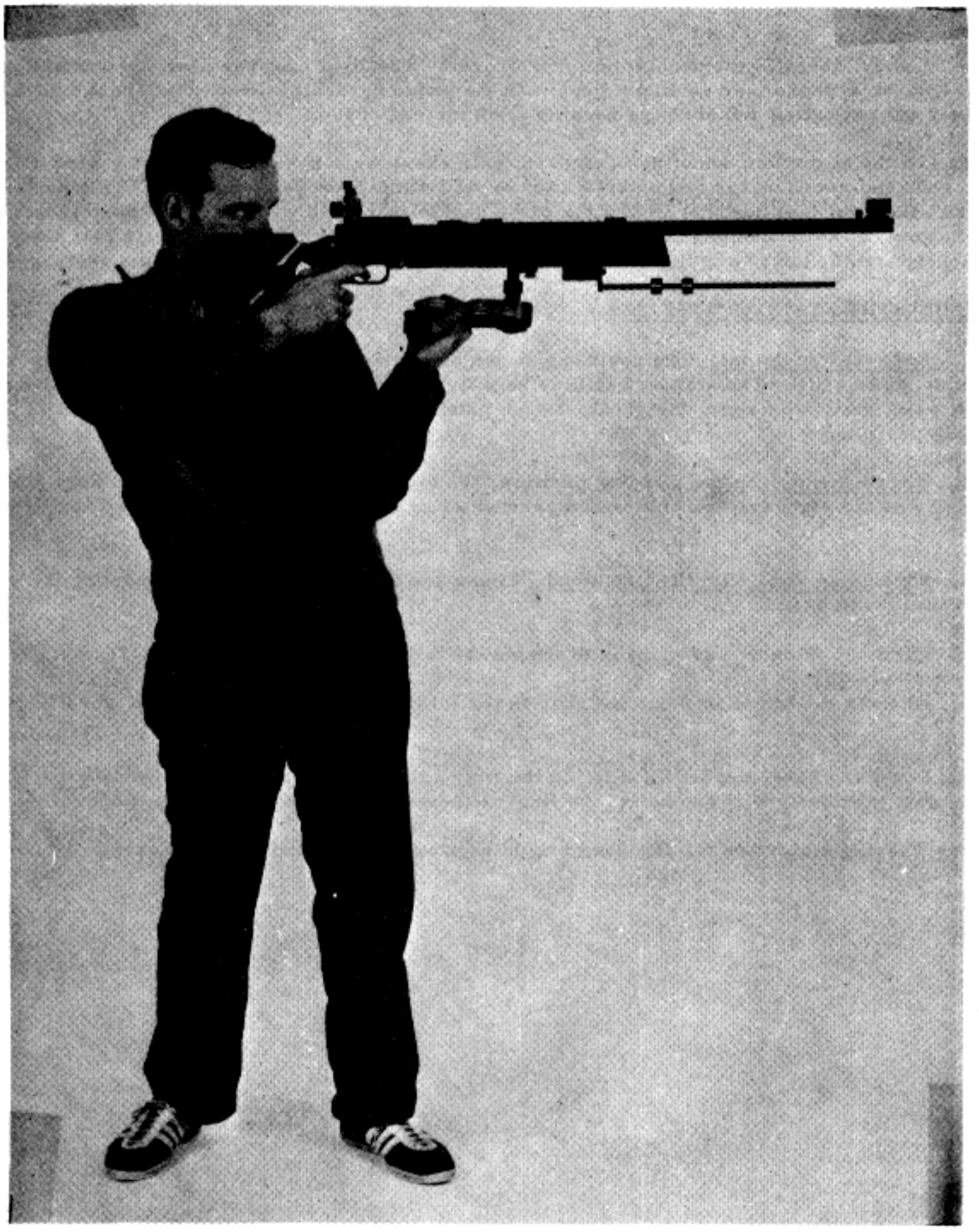


Figure 55. (Shooter B).

8. Technique automation is the act of completing a portion of the act of firing without having to consciously think about it. The beginning shooter must think about breathing, sight picture, and follow through in order to actually execute them. The experienced shooter does not actively think about sight alignment, sight picture, trigger control, position, breathing, or even follow through. They come naturally upon request and his mind is free to perfect his concentration thereby aiding all of the above. Most heavy coat shooters will find they will have to concentrate on follow through at first until it becomes automatic.

9. Lastly, there is the problem of poor scores. The light coat has been the downfall of many good shooters because they could not cope with the added hardship. When their hold deteriorated, so did their concentration and shooting became work instead of fun.

10. To the champion, shooting is constant pain and work. If he is not working hard enough to ache, he is not reaching his full potential and he will simply not be able to win. This desire is amplified with the light coat and that is why the same people that were winning in the heavy coats will win in light ones. The techniques discussed here are not meant to replace only those that have been previously stated, but to amplify them in light of the constantly changing shooting environment.

J. USING THE STANDARD RIFLE.

1. General Provisions: The positions shown on previous pages are not changed when shooting with a standard rifle. The standard rifle is broadly defined as a straight stock rifle without a hook butt or palm rest. However, the greatest care must be taken to meet the requirements of the basic standing position.

2. Requirements: In the standing position, the stock will generally be placed very high in the shoulder and the right arm will be raised somewhat. The grip of the right hand will be firm (Figure 56).

3. Supporting Rifle with the Left Hand: There are several methods of supporting the standard rifle with the left hand.

a. Probably the best expedient is to double the fist (Figure 58).

b. Another method is to place the rifle in the fork of the index and middle fingers (Figures 56 and 57).

c. Some shooters support the rifle on the finger tips. This is not ideal because there are too many joints involved and if any one of the fingers moves the hold could be disturbed.

d. Wearing a glove on the left hand should improve any method that is chosen.

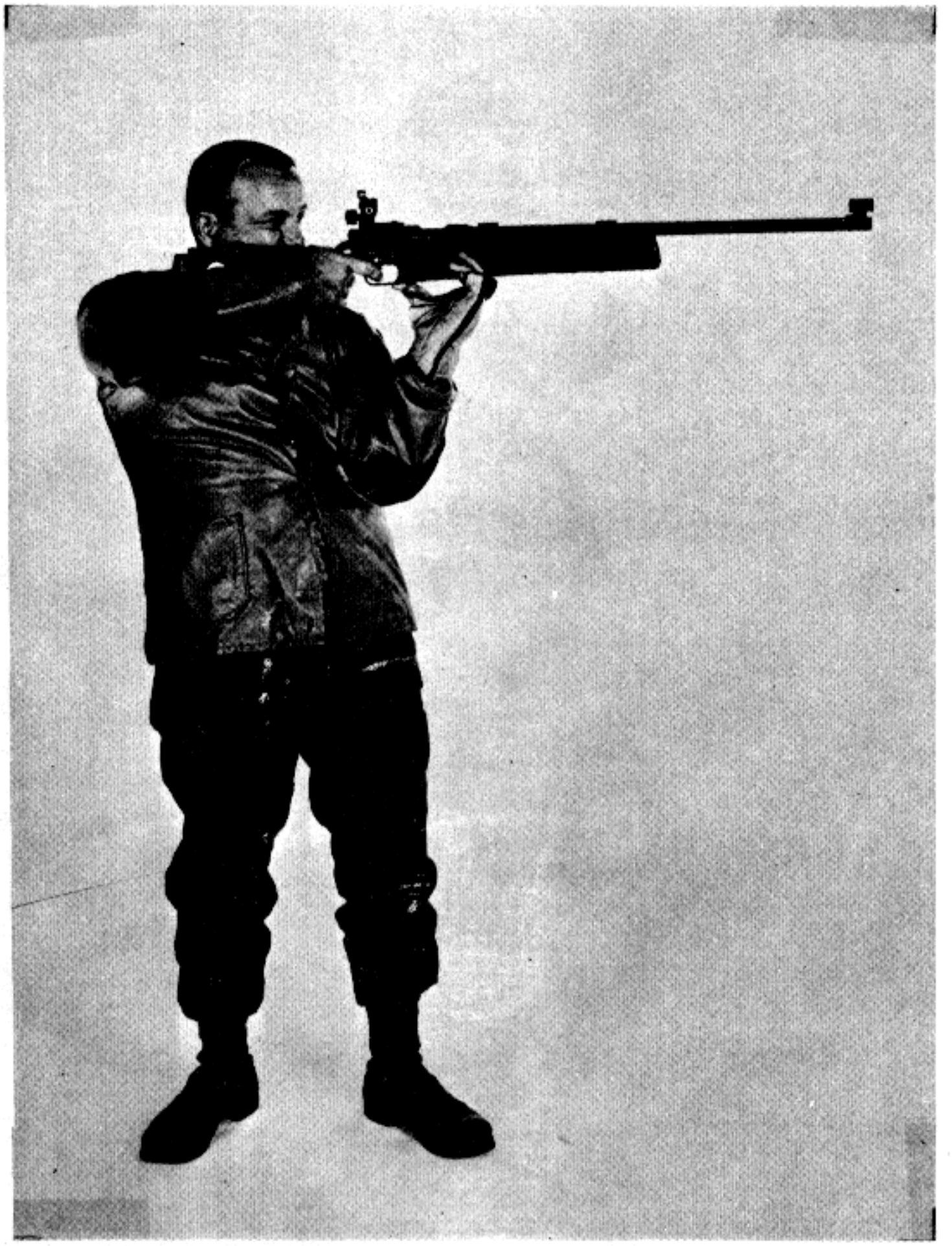


Figure 56. (Shooter D).

Figure 57. (Shooter B).

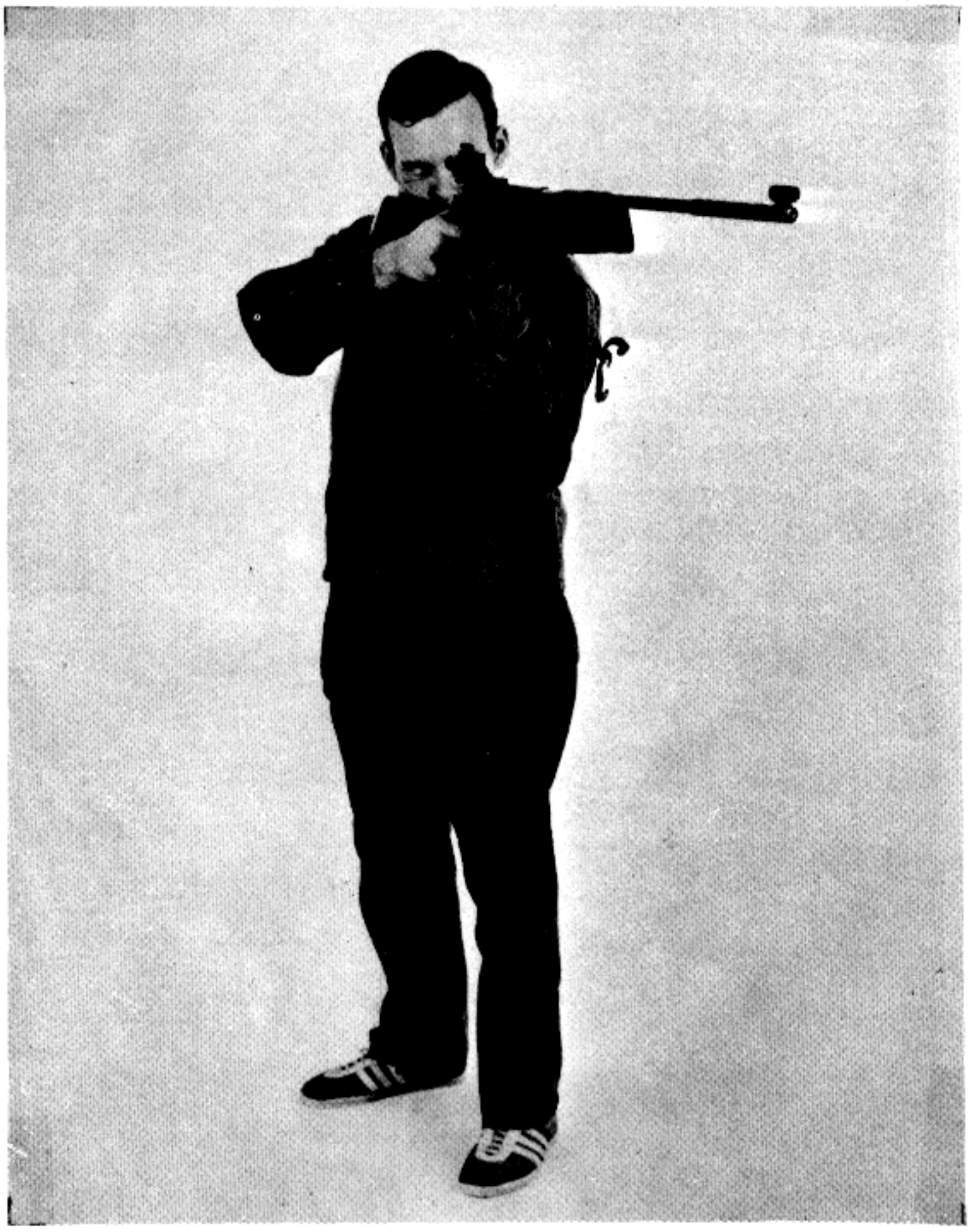


Figure 58. (Shooter B).

Figure 59. (Shooter B).

Figure 60. (Shooter B).

CHAPTER VII

THE KNEELING POSITION

A. GENERAL. Probably the most important change in the recent evolution of international position shooting is taking place in the structure of the kneeling position.

A few outstanding shooters are now shooting scores in the kneeling position that are meeting the standard that is felt by most authorities as approaching the attainable potential. The mental barrier of shooting perfect or near perfect scores in the kneeling position has crumbled. Shooters are beginning to expect their kneeling scores to be very near if not equal to their prone scores. The old goals for kneeling scores were progressively set at 380, then 385, and later 390. Shooters are now striving for 395 or better score. Of course, weather conditions are important considerations in establishing a goal.

B. VERSIONS OF THE KNEELING POSITION. At the present time, the top marksmen of the world are using the forward kneeling position, or some modification of the forward position.

1. The Erect Position: The old school maintains that the right heel and the kneeling roll should support at least 70% of the weight of the torso. In this method, the spine is erect and the head upright. The left foot supports about 15 to 20% of the remaining weight, and the right knee no more than 10% (Figure 61).

2. The Forward Position: In the newer position, with which many of the shooters are having excellent results, the left foot supports the majority of the weight. The body leans forward with a pronounced shift of the weight onto the left knee (Figure 62).

C. USE OF THE KNEELING ROLL. In either variation of the position, however, there are common fundamentals to be observed. It is agreed that the kneeling roll should be used (Figure 63). The best international shooters of the world do not sit on the side of the foot. The selection of a roll is left to the individual. Naturally it must conform to the size specifications as set forth by the ISU. A leather or canvas bag containing sand, sawdust, or rags seems to be the best. The roll should fit the conformation of the instep (Figure 64). Variations in thickness will depend on shooter preference. The right foot, when viewed from the rear, is perpendicular to the ground and the heel is centered at the base of the spine (Figure 65). A newer shooter will frequently have difficulty when first using this position. The right knee, ankle, or foot will be uncomfortable. But as in the other positions, training will condition the body to accept the new strains so introduced. Also, loosening the laces on the right boot will release some of the pressure on the instep.

D. FUNCTION OF THE RIGHT KNEE. The right knee is used to support only a minimum of weight in either of the accepted positions. The angle of the right leg from the line of fire will approximate a variance of between 10 to 60 degrees (Figures 66 and 67). In the forward position the leg will form a smaller angle and the body will face more toward the target than in the erect position.

E. POSITION OF THE LEFT LEG. The left foot is approximately parallel to the inside of the left thigh (Figure 68). If the rifle is pointed to the right or left of the target the shooter should not move only the left foot, but move the entire body in its assumed position, as though the shooting mat were rotated. For some shooters, turning the left toe inward toward the right knee will "lock" the knee and reduce left to right movement of the rifle. The left ankle and shin bone form a straight vertical support (Figure 69).

F. POSITION OF THE BACK. The position of the back seems to play an important part in attaining a good hold. The torso should be positioned so that maximum stability will be derived from the support areas. In the erect position the back is postured so that the weight is supported by the roll. In the forward position, the left foot acts as the understructure for the torso which is leaned well forward over the left knee. In neither case is the spine tilted to the left or right of the vertical as this will result in an unsteady position (Figure 70).

Figure 61. (Shooter L).

Figure 62. (Shooter H).

Figure 63. Kneeling Roll.

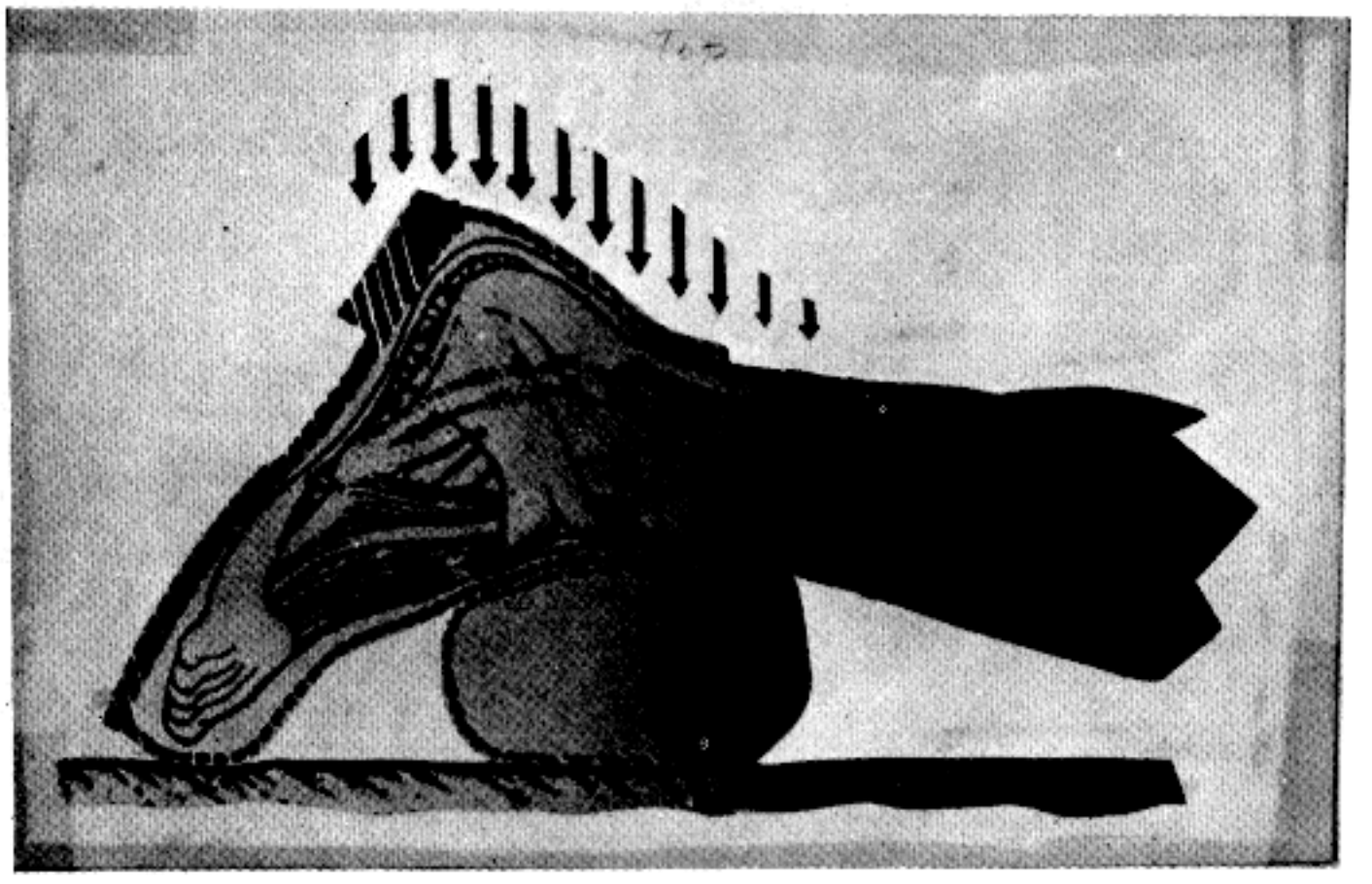


Figure 64. Placement of the kneeling roll.

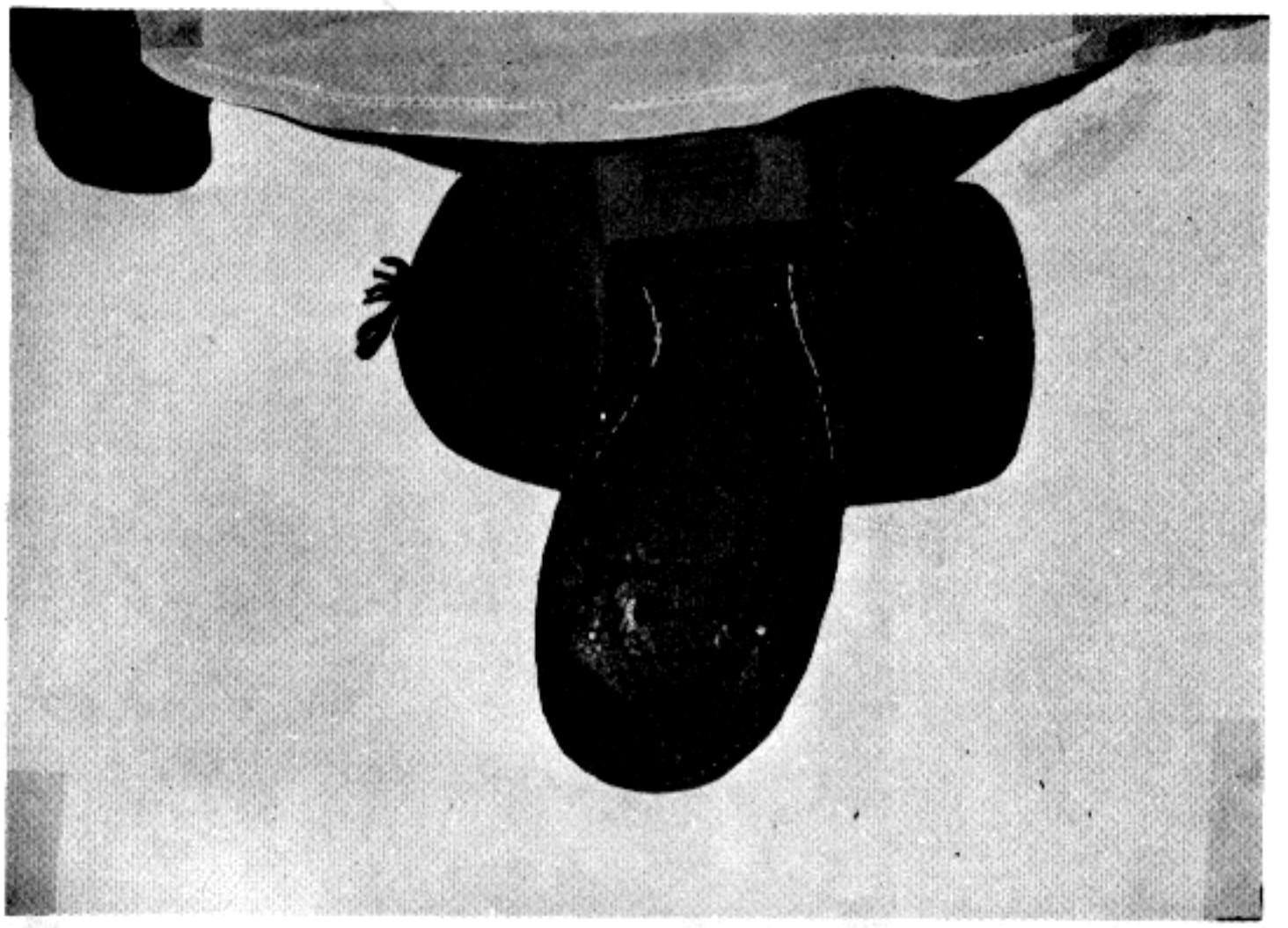


Figure 65. Position of the right foot.

G. POSITION OF THE HEAD. The head, in relation to the body, should be erect or leaned forward slightly; not to the extent, however, that the eye will be looking through the upper lid or brow, or that the neck will become cramped Figures 71 and 72). Proper eye relief should be maintained. The head should not be leaned to the rignt to be placed on the stock. The head, like the spine, should be vertically (Figure 72). The rifle may be canted, if necessary to bring the stock so that the proper aiming techniques may be performed.

H. FUNCTION OF HOOK BUTT PLATE. The hook butt plate is used to the extent that it assists in the proper placement of the rifle into the shoulder. It also enables the stock to be raised up to meet the face while continuing to give maximum rifle-shoulder contact (Figure 73). For many marksmen, the stock is somewhat shorter for kneeling than it is for prone.

I. USE OF THE SHOOTING JACKET. The shooting jacket may be fastened or left open in the front. The latter method allows for freer expansion of the chest and stomach while breathing. It may be fastened loosely only to hold the jacket in place. However, by electing to fasten the jacket securely, a shooter might feel that he has a more "solid" position. In the forward position the bottom button and the belt of the pants may have to be loosened in order to keep from putting too much strain on the stomach muscles.

J. POSITION OF THE RIGHT ARM. The right arm hangs naturally at the side in most cases. Occasionally one will see the right elbow being held up just slightly. This will insure that the weight of the arm is not pulling down on the rifle. The sole job of the right arm is to get the trigger finger to the trigger. The right hand is placed on the pistol grip with the thumb either along side the stock or through the thumb hole (Figure 74). The trigger finger should touch the rifle only at the trigger itself. The degree of firmness that the grip is applied with the right hand varies with individual preference.

The important point to remember when thinking of the opposing forces pressing against the rifle with the right hand, the face and at the butt, is not how much pressure is applied but that the pressures be consistent for each shot fired.

Figure 66. (Shooter F).

Figure 67. (Shooter L).

Figure 68. (Shooter K).

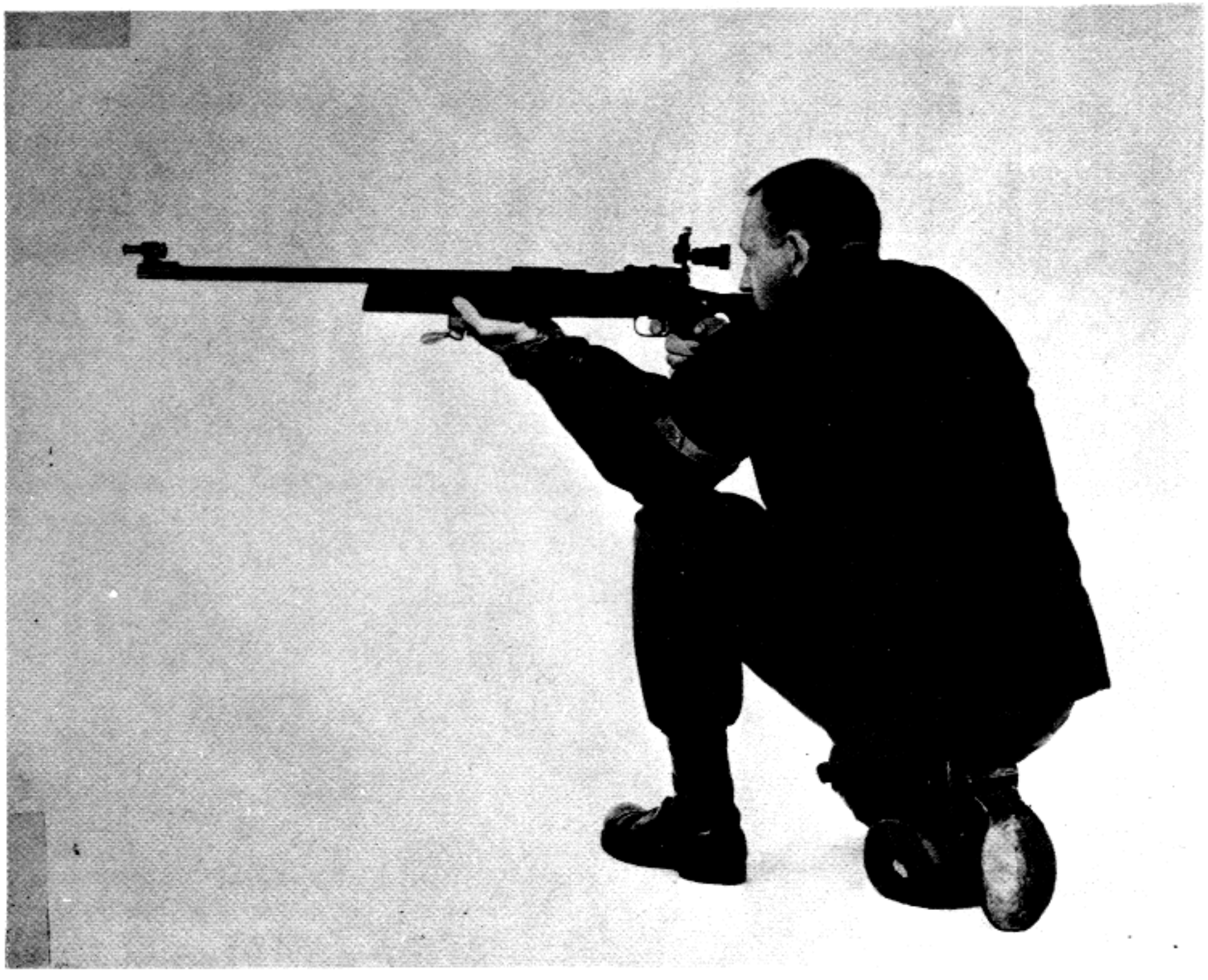


Figure 69. (Shooter D).

Figure 70. (Shooter C).

Figure 71. (Shooter G).

Figure 73. (Shooter C).

Figure 74. (Shooter A).

K. FUNCTION OF THE LEFT ARM.

1. The rifle is placed in the heel of the left hand with the stock being nearer the thumb than the more flexible area towards the fingers (Figure 75). A shooting glove is worn on the left hand. The fingers of the left hand do not grasp the rifle in an attempt to guide it.

2. The left wrist should be straight. The left elbow is placed on the top of the left knee or slightly to the left of this position (Figure 77). The elbow will be directly under the stock or slightly left of it (Figure 75 and 76). To place the elbow completely under and to the right of the stock results in considerable strain in the arm and back muscles. As a guide for the average shooter, the left forearm and the left thigh should form a straight line when supporting the rifle (Figure 75). The forearm may angle up or down from this line, depending on the individual's body conformation.

Figure 75. (Shooter B).

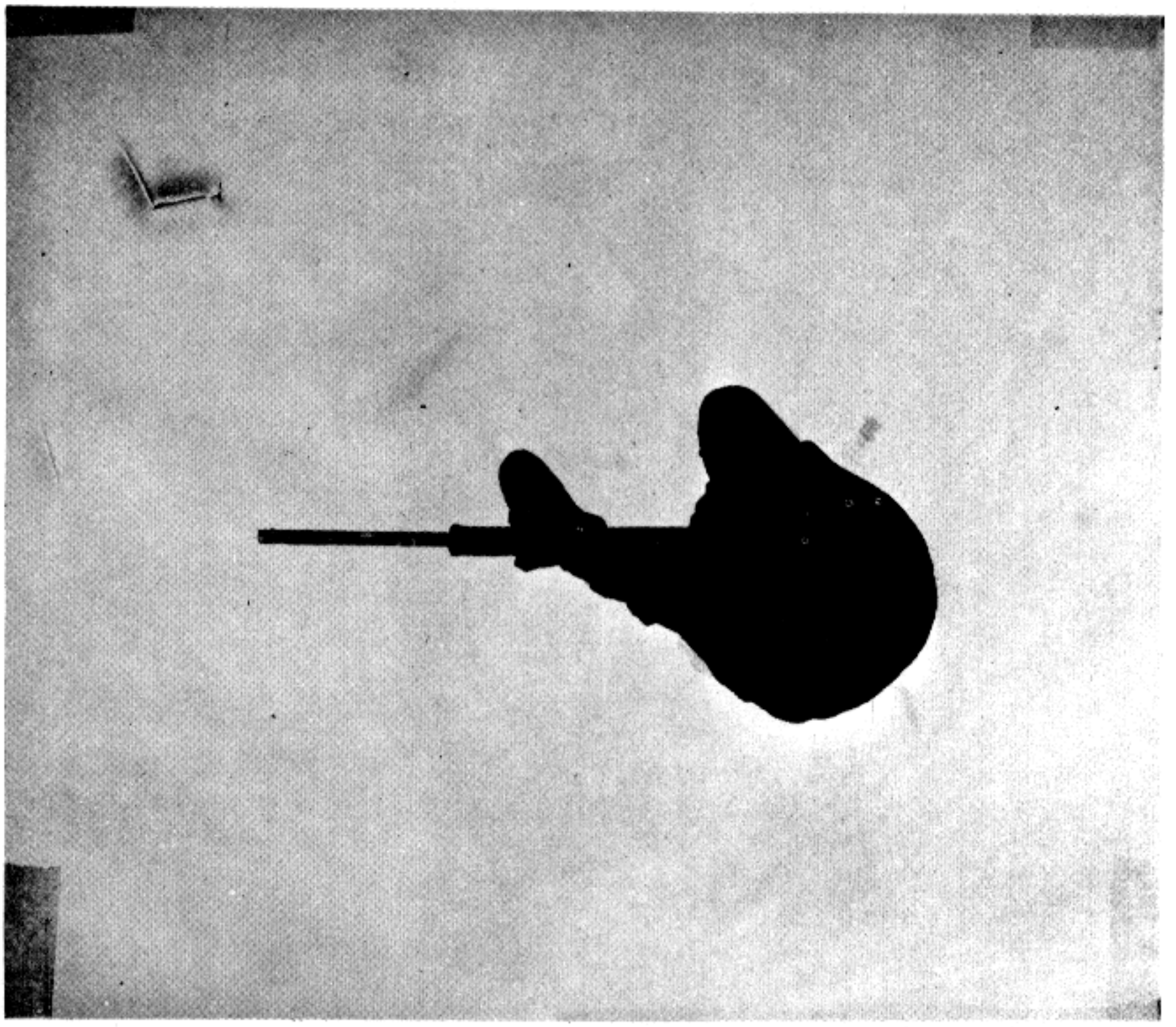


Figure 76. (Shooter C).

3. The left hand will be tight against the hand stop and the placement of the sling on the upper arm may be high or low. The sling, not the left arm, should do the work of supporting the rifle. The place at which the sling is attached to the stock depends upon the position used and the length of the shooter's arms. In the forward position, the sling is attached much closer to the trigger guard as compared to the erect position.

Figure 77. (Shooter L).

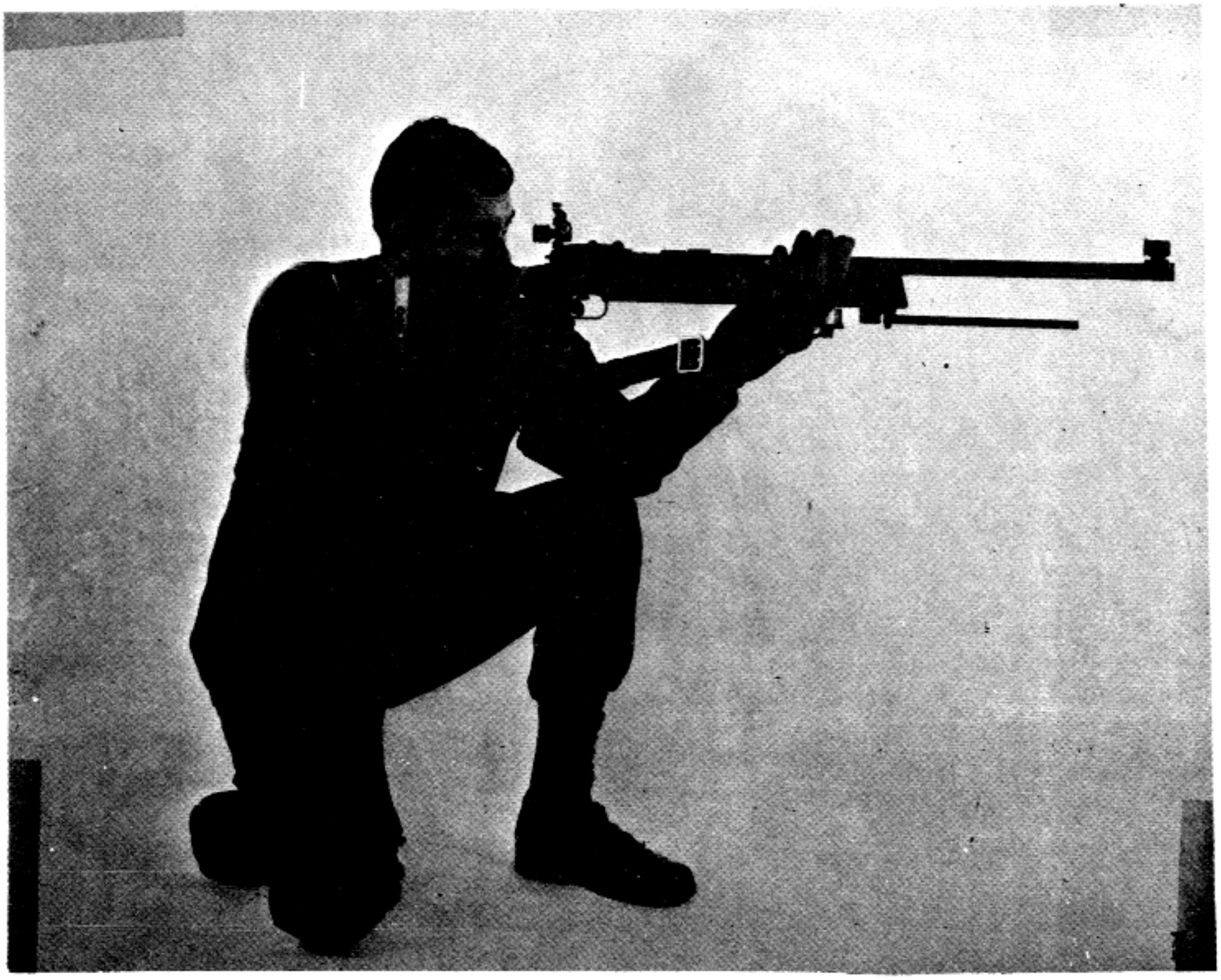


Figure 78. (Shooter M).

Figure 79. (Shooter D).

Figure 80. (Shooter K).

CHAPTER VIII

POSITION REFINEMENT

A. PRONE POSITION.

1. A shooter should work constantly to refine his position and improve his hold. Very slight changes or adjustments in the position can have a noticeable effect. A good method of checking movement in the position (usually from pulse beat) is to use a telescopic sight. Some shooters can keep the crosshairs on a bullethole at 100 yards. Learn to fire and reload without disturbing the position. When reloading, the shooter should insert the round into the chamber with his finger, being careful not to strip any lead from the bullet.

2. The stock of the rifle should be so constructed that when the shooter is in position and places his head on the stock, he is looking through the sights. Some shooters apply more facial pressure against the stock than others. Again, the important point is that the facial pressure be CONSISTENT! The head should be as erect as possible and proper eye relief maintained.

3. The prone position is so steady that it may be said to have a single point of aim. The position should be oriented so the natural point of aim is directly in the 10-ring. Small changes in the point of aim can be affected in several ways. Small horizontal changes may be made by moving the right foot to the right or left. Very fine elevation changes can be made with breath control. Major changes should be made by reorienting the entire position or readjusting the sling, fore-end stop, and butt plate.

4. It is important when analyzing the position to insure the ammunition and rifle is grouping better than ones hold to accurately measure the results of the position.

B. KNEELING POSITION.

1. The shooter has some latitude in building a "tight" or a "loose" position. There are many areas in which a shooter is given a choice of techniques. This is not meant to be evasive. It is to stress that there is no iron-clad method. What works well for one person may not apply at all to another. Some USAMKTU shooters have very loose positions. They describe the rifle as "floating," that is, barely touching the right shoulder and seeming to balance on the left hand. Other shooters have relatively tight positions. They bring the rifle back into the shoulder firmly and grip the stock to some degree with the right hand. They describe the kneeling position tension on the sling as being similar to that which occurs in the prone position. Initially, the kneeling position will be unsteady. The unsteadiness may be caused by a number of factors that are peculiar to that individual's position. Correcting the unsteadiness requires a process of elimination, trial and error.

2. A 10-ring hold is not unusual in the kneeling position. When the shooter develops a 10-ring hold, his greatest problem becomes a trigger control. Dry firing is an excellent way to detect and correct jerks or body movements that accompany the trigger pull.

C. STANDING POSITION.

1. The entire process of developing the standing position is a process of refinement. It should be conducted with the care of a scientific experiment; and by its very nature it must be developed over an extended period of time.

2. A good standing position is beginning to take shape when the rifle is pointed naturally at the target and the body meets the requirements of:

a. Bone support.

b. Balance, and

c. Slight but equal tension in all body muscles with no excessive strain on any one muscular mass.

3. The beginning shooter should not hesitate to make major changes in adjusting the position of the rifle but make small changes in the initial body position in order to find a satisfactory basic standing position.

4. After the initial period in which he is achieving a basic standing position, the shooter should proceed cautiously in making changes. This is partly due to the fact that in the early stages, his position may actually be correct, but he has not developed sufficient strength of body control to enable him to hold well. Needless to say, to change what would later prove to be a correct position would be harmful.

5. A great many adjustments are possible in the standing position. It is difficult to determine which possible adjustment would best correct a particular problem. The shooter should not make a change until he has carefully analyzed the cause of his problem and the results realized from the various changes he has instituted. Then he should note his present position, make the currently needed change, and note the results over a period of training sessions. If the change is not beneficial, he should return to the position he used originally. From further analysis, he should determine a new approach to the problem. In this way he avoids straying away from his basic standing position. If the change eventually proves to be beneficial, he should adopt it and incorporate it as part of his basic position.

6. The standing position is not built upon measured mechanical distances for the placement of feet, palm rest, hook, etc. The position is built upon the basic fundamentals as described in the standing chapter. The pictures of the shooters should be used as a guide to understand these fundamentals and not necessarily copied in hopes of increasing ones score by the reasoning that what works for one individual works for everyone.

7. A great amount of concentration is required in obtaining good standing scores. Shooting good scores is not as mechanical as in the other shooting positions. Many times a shooter may improve his standing score by exceeding his previous performance several times and upgrading his self confidence. Once this mental barrier of a certain score has been broken, he then becomes more demanding of himself and increases his overall level of concentration.

D. GENERAL REMARKS FOR ALL POSITIONS.

1. There are two things to remember in experimenting with changes in position or technique.

a. Never make more than one change at a time. This allows the shooter to determine the total effect of a specific change.

b. Never evaluate a change on the basis of a single shooting session. The results of a single test are not conclusive. There are too many factors, including the effects of change itself, that can affect performance. Any test should be run until the results are proven conclusive.

2. As a shooter progresses and refines his position, he will make smaller and smaller changes in his position, and his hold will become better and better. No shooter, however, ever assumes that he has finalized his position. Progress grows out of constant (though careful) refinement, and this refinement is a continuing process. Too many changes, too often, can be very detrimental.

3. Use of the Shooter's Diary: Changes in position and techniques should be conducted with great care and should be recorded in the shooter's diary and analyzed. When the shooter finds a steady position, which occurs often and sometimes unexpectedly, he should note all the characteristics of the position in order to "find" it the next time he shoots.

The diary should be used as a tool to help the shooter achieve higher and more consistent scores. It should contain positive information such as sight settings for various rifles and ranges, hook, palm rest, buttplate settings and etc. Scores should also be posted in the diary. Along with such tangible factors a number of intangible factors should also be noted such as how the score was obtained. Critical analysis of the shooter's positions and hold may merit additional diary entries. This may include sensations experienced while shooting, weight balance distribution, degree of muscle tension, mental attitude and factors affecting concentration and overall performance. Other information might contain ammunition records of ammunition testing, different ranges and dominant conditions you have experienced at these locations. The diary is to serve the shooter. If used properly it can be a time saving and self improvement aid.

CHAPTER IX

PHYSICAL AND MENTAL TRAINING

Competitors in all sports activities practice to better themselves. Rifle shooters must establish for themselves a program of training as well. The development of an international rifle champion must include physical and mental training.

A. PHYSICAL TRAINING. Physically, the shooter must be able to assume a comfortable position, hold the rifle motionless, and shoot for a sustained period without fatigue. Physical conditioning exercises have an apparently limited value toward improving the shooter's performance once he has achieved good body tone.

Physical conditioning serves several purposes:

1. Comfort - A comfortable position is based upon the inherent natural structures of the human body. There should be no unnatural stresses between body and rifle. Comfort in a given position also requires that the body be accustomed to the position. The beginning shooter is likely to find certain uncomfortable features in all positions. For example: the back bend in the standing position, the weight placed upon the ankle in the kneeling position, and the sling pressure in the prone position. Discomfort arises because portions of the body are being put to new uses. If the basic position structure is correct, the discomfort will usually disappear as the shooter's body becomes accustomed to the strains of the position. The best way to condition the body to a shooting position is to frequently practice or dry fire that position.

2. Hold - Holding the rifle motionless requires a stable position.

a. An incorrect head position in the higher positions, for example, will cause the body to sway involuntarily. This movement is reflexive and the shooter is powerless to control it.

b. A position that is out of balance will also cause involuntary movement and muscle strain.

c. By using bone and ligament support for the body and rifle, the shooter does not use muscles alone to support the body.

d. To hold the rifle in the 10-ring, the shooter must be able to control body movement by holding his muscles still and motionless.

The best way of training the muscles for the static work they must perform in shooting is through extensive firing practice or dry firing. Firing practice sessions should be conducted regularly. Short sessions conducted on a regular schedule are much more valuable than long practice sessions conducted infrequently. Frequent firing practice enables the shooter to acquire a "feeling" for muscle control. He learns about involuntary muscle contractions, which disturb a 10-ring hold and are responsible for some of the erratic shots. Regular practice enables the shooter to increase his ability to hold his muscles still and motionless. The shooter should follow a recommended schedule of practice in which he devotes a major portion of position training to the standing position (Figure 81).

3. Fatigue - If muscles become fatigued, they develop tremors and the shooter loses control of his body.

a. The muscles must be capable of controlling the body-rifle system for a sustained period without experiencing fatigue. Many of our best shooters often keep the rifle in a static position for long periods, waiting for the right conditions of light, wind, or body control.

b. The body must be capable of shooting an entire course of fire without fatigue. A full day of shooting requires a great amount of lifting and holding. Obviously, the muscles must be conditioned to perform such work. Since shooting uses a specific set of muscles, shooting practice is the best method of developing strength and endurance in these muscles.

4. Physical Conditioning Exercises - Physical conditioning exercises have been the subject of much discussion. Experiments conducted at USAMKTU have yielded the following conclusions.

a. General physical conditioning, if conducted properly, in no way impairs shooting performance.

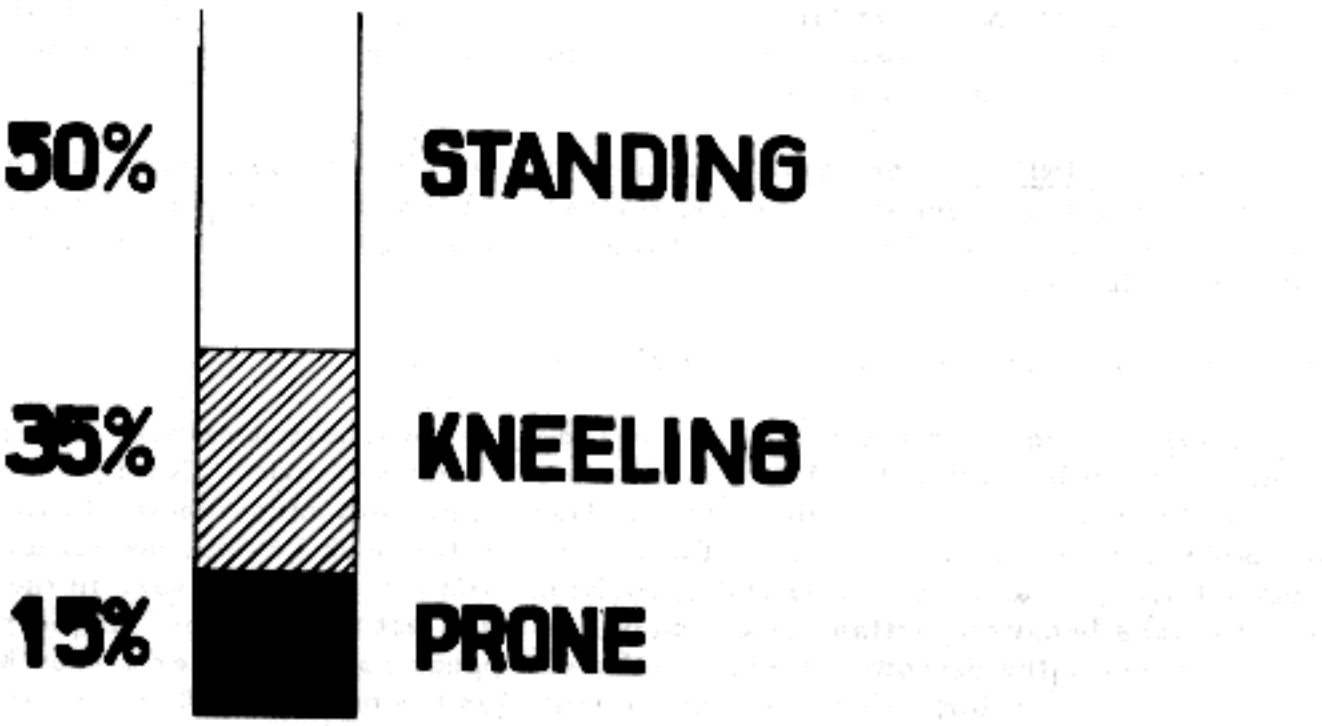


Figure 81.

b. Physical conditioning does not contribute significantly to improving scores except to increase the individual shooter's potential who is in poor physical condition.

c. Before applying these conclusions, we must realize specific facts.

(1) The experiments were conducted with physically mature individuals who lead physically active (though not necessarily strenuous) lives. Individuals who lead sedentary lives and lack muscle tone or strength would certainly benefit from exercises that tone and condition the body.

(2) All conditioning programs, however, must be long-range programs. Crash programs in physical conditioning definitely impair shooting ability.

(3) Physical conditioning may give some shooters a psychological boost by contributing to a feeling of health and well being. The shooter who follows a regular schedule of physical conditioning may acquire the confidence that he is better trained than his competitors.

(4) Some individuals are also capable of using physical conditioning as a form of self-discipline. They force themselves, for example, to run at top speed for 200 yards or more. Forcing themselves beyond easy limits becomes a means of developing will-power and self control. They feel that this discipline increases their ability to control themselves under pressure. It is important to note that this form of training must be self imposed. An individual must impose it upon himself because of a strong desire to excel in shooting and because of a compelling motivation to win. Such rigid discipline should not be imposed by a coach. The shooter who wishes to train this way, will do so. For a coach to force such discipline upon a shooter will only make training a difficult chore and probably cause the shooter to lose interest.

d. There is no one physical training program best suited for shooters. Some of the top world shooters have indicated they feel best when they run a great deal and participate in vigorous sports. Others perform merely enough exercise to maintain muscle tone. Apparently each individual should develop a physical training program that best suits his individual needs and temperament.

(1) MTU shooters have had good results with a light program of dynamic tension exercises as a warm up before shooting. Five or six calisthenics are adequate if taken at the end of the shooting day. Dynamic tension exercises seem to develop muscle control as well as muscle strength.

(2) MTU shooters are also encouraged to run each day. Many shooters feel that this is the most valuable method of conditioning outside of shooting itself.

(3) In addition, almost all shooters participate in softball, basketball, tennis, volleyball, or gold. Generally speaking, any activity that keeps the individual active and fit, and which breaks the monotony of shooting, is considered valuable.

(4) After an individual has reached a level of fitness, additional physical conditioning does not contribute materially to his physical shooting ability.

(5) Exercises such as weight lifting which strengthen the muscles by shortening them are not desirable.

5. Food and Stimulants: Quite often questions arise that pertain to a shooter's diet. There seems to be no particular diet that especially enhances a shooter's performance. It is best, however, to not deviate from one's normal routine of eating time and types of foods consumed as long as the diet is balanced.

a. When the human body consumes food, that food must be digested. The digestive process places a workload upon the heart and the results in a stronger pulse beat. Shooters will find that eating right before (or even worse, during) a match will hamper their performance. Try to eat early enough before a match so that the ability to execute proper techniques will not be impaired. Some shooters will find that particular foods do not agree with them. They should naturally refrain from eating these foods before shooting.

b. Medical authorities, using sensitive measuring devices, have found that alcohol, coffee, tobacco and drugs increase muscle tremors and impair the ability to perform delicate muscular movements. Reflex action is so important in shooting that inducement of any depressant effect is extremely harmful to performance.

c. Most champion shooters are able to "break training" from time to time without causing overly harmful results. But such violations must occur at times when competition is absent from the schedule. Also, these shooters are intelligent enough to realize that over-indulgence is not wise. Championship marksmen often start honing the sharp edge on their performance as much as six months before an important match. During such periods these shooters are careful to stay "in training."

B. MENTAL TRAINING. If the mind is distracted, or if concentration is incomplete, the shooter will lose control of his performance. His score will be considerably affected. There are three broad categories of conditions that can influence the ability to concentrate.

1. Inability to Concentrate for Extended Periods of Time: Almost everyone is capable of intense momentary concentration, but few people can concentrate for relatively longer periods of time.

a. A full course International Match of full day of NRA shooting requires a shooter to concentrate intensely during frequent intervals over a period of several hours. Many shooters complain of being mentally exhausted at the end of one of these day-long matches. They feel that they could not devote full concentration to their shooting if they were required to perform over a longer period.

b. Other shooters cannot maintain intense concentration even this long. They become mentally exhausted before the completion of the day's firing. Their performance deteriorates toward the end of the day because they can no longer concentrate on body control or other factors they consider critical to their performance.

c. The ability to concentrate throughout a course of fire can be developed through practice. A shooter should practice as regularly as possible. During practice he should attempt to make each shot (live or dry) the best he is capable of. He will gradually acquire the ability to concentrate intensely for longer and longer periods for more and more consecutive shots.

d. This development cannot take place overnight, and must be acquired patiently. Shooting sessions should not continue beyond the point where concentration is completely exhausted, because bad habits are easily acquired unless practice is conducted with great care. The quality of a shooter's practice is far more important than quantity. Shorter practice sessions which are conducted with intense concentration and maximum effort are far more beneficial than much longer sessions of lesser quality.

2. Interference from Physical Pain or Discomfort: Pain distracts the shooter's mind and interferes with concentration. A shooter should not hesitate to alter his clothing or shooting equipment in order to achieve comfort. The only requirement is that the correct shooting position must not be violated.

a. Even a minor discomfort can have a cumulative damaging effect. A thing so small as a pebble underneath a shooting mat may cause mild discomfort. It may distract the shooter for only a single shot, but even this small lapse can easily lose a match. This kind of discomfort and distraction can easily be avoided.

b. Under various circumstances, a certain amount of pain is unavoidable. The kneeling position, for example, places the body weight almost completely upon the ankle. The ankle may eventually become conditioned to carry this weight. However, many people find that even after years of shooting, the ankle still becomes uncomfortable after they have been in position for a period of time. In addition, some shooters find that they can never completely eliminate discomfort in all of the shooting positions.

c. In cases where pain is unavoidable, the shooter must learn to tolerate it and concentrate on performance. However, forcing one's self to endure discomfort requires increased mental effort and hastens the approach of mental fatigue. The shooter, then, should avoid shooting for a long period in an uncomfortable position. A break after a 10-shot string will relieve the pain and allow the shooter to rest his mind and body. In no case should an individual attempt to shoot when pain is so great that he cannot fully concentrate on performance.

3. Nervous or Emotional Reactions to Competition: New shooters, expecially, are subject to nervousness when they shoot in competition. They tend to worry about the score they will get. They think about their score so much that they dilute their concentration on performance. Consequently, their match scores may be considerably below their practice score average.

a. Nervousness in most cases is nothing more than a fear of failure. Many new shooters feel that competion "causes" them to be nervous. This is not true. They cause themselves to be nervous. They work themselves into a state of agitation because of fear that they will not shoot the best score they are capable of.

b. It is helpful to a shooter to realize that worrying can only harm his performance. One shooter's anxiety cannot affect the performance of the other shooters in the competition. He cannot control the other shooter's scores by thinking about them. But he can shoot a good score himself by concentrating on his own performance.

c. A new shooter cannot expect to conquer nervousness overnight. It is a reaction of his entire personality. Psychologists have learned that the entire personality determines an individual's every action. For that reason there can be no part of an individual's personality that can be called his shooting personality, and there can be no separate shooting psychology. There is just one psychology pure and simple. Nervousness, as related to the many aspects of the personality, is a highly complex reaction. Because of this complexity, there is no simple, easy solution to overcoming the reaction.

d. The indicated solution to reduce the effects of nervousness is extensive match experience and repeated exposure to competitive stress. The shooter must attempt to exert more control over his nervousness each time he shoots a match. Gradually his personality will change by adjusting to the competitive situation. His complex feelings and attitudes will change, and he will conquer his fears about his performance. He can then approach competition calmly and thoughtfully, and devote full concentration to performance.

e. The body can be trained to near perfection in holding itself motionless. An individual who can shoot a string of tens from any position illustrates this. It is conceivable that anyone who can fire several tens in succession has the ability to fire tens for a complete match course. We have good reason to believe that there are shooters in this country who are physically capable of shooting scores of 1190 or better (ISU). Physical limitations alone have not prevented these scores from being fired. It is apparently because of psychological limitations. When the higher scores become psychologically acceptable, they will appear in record competition. The human body is capable of firing much higher scores than those that appear in competition today.

f. There is an opinion among some people that alcohol or drugs can help the shooter overcome nervousness. This is a false assumption.

(1) Alcohol and drugs give a shooter a false sense of security. They make him feel that even if he makes a mistake it will not really influence the outcome. The individual thus does not try as hard, but feels that he is nevertheless doing quite well. Inevitably he is defeated by a shooter in full control of his body, senses, and will power.

(2) Alcohol and drugs will not aid a shooter in gaining experience in overcoming nervousness. They only blind the shooter to his reactions, and he learns nothing about controlling them. A person learns to overcome nervousness by realistically facing up to it in an intelligent, clear-headed manner.

Most experienced champion shooters concentrate on performance while they shoot a match, and think about scores when the match is over. They learn to do this through self-discipline, gaining competitive experience and refraining from reliance on alcohol and drugs for moral support.

4. Mental Processes Involved in Shooting: In the moment before pulling the trigger, the shooter is attempting to stop the movement of the body and hold the rifle in the 10-ring. He is thinking about stopping all movement in his body muscles and maintaining body control.

a. We usually define "thinking" as a reasoning process involving words and sentences, or some other meaningful symbols such as numbers. But there are times when "thinking" includes neither words nor symbols. The trained athlete who drives a golf ball, shoots a basketball, or throws a baseball does not think with words at the moment he performs these activities.

b. He "concentrates" upon body control. He does not form a verbal plan for each muscle movement, such as "I will continue to grip the club, contract the muscles of my right shoulder and side, break my wrist to the right....." etc. He is aware of these different muscular activities, but he is not thinking about them in words. His mental processes are best defined as a state of heightened awareness of the conditions of his body. This is true in shooting. The trained shooter does not think with words at the moment he attempts to hold the rifle motionless. He is aware of the amount of control he has over his muscles and the degree of steadiness he can expect from them. This awareness of body control should continue through the delivery of the shot to provide follow-through. This is especially necessary in smallbore shooting because of the relatively slow barrel time of the bullet in transit. There are several factors that interrupt the awareness of body control and thereby cause a breakdown of performance. These factors will be considered in the chapter on physical and mental training.

c. We have considered several of the factors involved in the integrated act of shooting. The application of mental awareness may shift noticeably under certain circumstances, and deserves to be mentioned.

(1) In the standing position most shooters must force the rifle to stay within the 10-ring. To do this, they must center their awareness on body control in order to hold the muscles (and rifle) still and motionless. They must overcome the natural tendency of the body to move around its center of gravity. If they shift their attention away from body control, the hold may break out of the 10-ring during the trigger pull, resulting in lost points.

(2) In the most stable positions this may not be the case. Many shooters can hold 10-ring in the prone position without much effort. Some can do this in the kneeling position. A few can do it standing. Because of their stable position, these shooters can dependably hold 10-ring without a great deal of attention to body control. Body control is then no longer the critical factor in the delivery of a ten. Chances are that eye fatigue, wind conditions, or a smoothly controlled trigger pull may emerge as a more important factor. In that case, the center of awareness will shift to this more critical factor. If awareness centers on trigger control, the reflex characteristics of the trigger pull will be modified.

(3) This shifting of awareness may apply to any shooter in any position if the dependable hold is less than the 10-ring in scope. However, if the shooter cannot hold 10-ring, body control must be considered the critical factor. The shooter who fails to realize this is attempting to shoot "on the move" and appreciably limiting his performance.

5. Characteristics to Develop in Mental Training: MTU shooters have dominated the recent World Championships, Pan American Games, Olympics, and the National Matches. The individuals who won these matches feel that a champion shooter must have three characteristics.

a. A champion shooter must be able to analyze his performance. Thinking about his performance is the only way he can determine why he has a specific problem. Analyzing the problem is the only way he can find a cure. Then he must plan how to put the required corrective measure into practice.

(1) Thinking habits are vitally important. A shooter must never form conclusions on the basis of a hunch or a sudden flash of insight. In fact, he should never hold anything more than the results of the test, even if they contradict what he thought was a brilliant opinion. He must also weigh the facts about his performance that are pointed out to him by other experienced shooters. He must never allow pride or personal feelings to blind him to the logical course of action.

(2) A shooter would do well to look upon shooting as a science and to look upon himself as a scientist. He should view shooting as an experiment with a purpose--to shoot the best score possible. With this detached, impersonal approach, he can work strictly within the limits of the scientific method.

(3) Conclusions should not be based purely on the results of practice sessions. The final test of a method is whether it works under match conditions. A shooter should enter a number of minor matches simply to test new methods before using them in a big event. In addition, he will gain valuable match experience.

(4) The further a shooter advances, the more importance he gives to analyzing performance. Our best shooters feel that the ability to analyze performance accounts for at least 75 percent of a champion shooter's ability.

(5) Beginning shooters should keep a shooting diary. As a written analysis of each day's performance, it serves as a permanent record of results. Such a record is invaluable in enabling the shooter to see trends and patterns in his performance. It is an excellent aid to the process of refining positions, techniques, and training methods (See Chapter VIII - Position Refinement).

The most important function of a diary is to force the shooter to analyze. In addition, writing helps to reinforce any learning which took place as a result of the analysis. The shooters diary is a method of insuring continuing analysis.

(6) One common tendency of all shooters is to analyze performance only in terms of mistakes made. A shooter should actually pay more attention to his good shots than to his poor shots. It is necessary to know why a shot was poor in order to avoid the same mistake on the next shot. But it is even more necessary to know why a shot was good in order to repeat that performance in the future. Analysis is a constant, continuing process: it is not reserved for days when performance is poor.

b. A champion shooter must have confidence. When he goes to the line to shoot, he must feel that he is the man to beat. He must be convinced that if he concentrates on performance, he can shoot a certain score; and he must know that his score will win the match.

(1) The champion never allows himself to be over-confident. He never feels that winning will be easy. He puts a full measure of effort into every shot in every event.

(2) The champion shooter must not tolerate a decline in his feeling of confidence. He must never feel that he is good for only second best. If he thinks of himself as second best, he will shoot for only a second best score. If he gets that score toward the end of the match, he will relax, and he will seldom if ever beat the man who keeps his mind on shooting for first place.

c. A champion shooter must have a compelling desire to win.

(1) A strong desire to win will motivate the shooter to train correctly. It will cause him to analyze the smallest detail to his performance in order to gain in additional point. It will reinforce his determination to give up coffee, tea, alcohol, and tobacco. It will prevail upon him to practice regularly and to make every shot count. It will drive him to perform better than anyone else, and to continue to improve in order to stay out in front of the field. It provides him with the will power to control and discipline himself in the face of intense competition. It instills in him the killer instinct--the desire to beat everyone else on the line, regardless of their ability or reputation. It enables him to be a champion.

(2) Champion shooters are quick to point out, however, that mere desire to win will not in itself win a match. It must be backed up with an ability to shoot a winning score. An intelligent analysis of shooting is necessary to develop this ability. Desire to win is simply useless energy unless harnessed by intelligent planning and self-discipline.

(3) Most champion shooters feel that they started to be successful when they set high goals for themselves. They decided that instead of being good shooters, they would become the best shooters. When they began to accept nothing but the best from themselves, they became champions.

CHAPTER X

SHOOTING HABITS

A. GENERAL. In the process of devoting a great deal of time to marksmanship, a competitor will, through his own experience, find that there are a number of helpful hints which he can pass on to newer shooters. Some of the items contained in this chapter are in the form of shooting safety while others may pertain to such varied areas as etiquette and shooting procedures.

B. SAFETY.

1. Before any individual is exposed to the use of firearms he should receive a period of instruction on safe handling of weapons. This instruction should include knowledge of range commands and range procedures.

2. Do not attempt to work on any piece of shooting equipment unless you are highly qualified. This is especially true of tampering with the intricate mechanical components of such items as triggers or telescopes.

3. Do not attempt to hand load ammunition unless qualified to perform the operations safely.

4. Learn how to properly care for all of your equipment. Most of it is expensive and preventative maintenance is important. This includes the cleaning of the bore after shooting.

5. Never touch another competitor's rifle or equipment without his permission.

C. PROCEDURE.

1. Read and know the rule book for the type of shooting you are to participate in and keep abreast of recent changes.

2. Prepare for oncoming matches. Get a copy of the program and read it carefully! Send in entries early. Make arrangements for living accommodations at out of town matches. Make a list of all items of equipment and check the list before you depart from home. Inspect your shooting gear.

3. If you have never been to the range before, always go to the range the day before the match. Some ranges are extremely difficult to find and many shooters have missed their relay because they became lost on the way to the range.

4. Arrive at the range early enough to greet all your friends and set up your equipment behind your designated firing point.

5. Test and select your ammuntion before you go to a match. Keep the ammunition in a cool and dry place, not for example, in a hot car trunk.

6. Police your brass and clean up trash around your firing point before leaving the range.

7. Insure that your target is the correct one for the match being fired, and that you have entered the appropriate information on it.

8. Double check your target and backing target to be certain they are securely fastened to the frame and will not blow loose.

9. Place the backing target in the correct location and be certain that it is correctly marked.

10. You will normally not be permitted to handle your own target after you have fired on it.

11. Know what to do in case of a crossfire or a shot outside the scoring ring of the sighting bull's-eye.

12. Before shooting for record, fire about five fouling shots through your barrel, and then at least five sighting shots. This gives you and your gun a chance to "settle down".

13. Load the round into the chamber with your fingers. Pushing it in with the bolt can result in lead being stripped from the bullet.

14. Keep accurate count of the number of rounds you have fired at each bull.

15. Don't worry about looking at other competitor's targets until you have finished firing your own.

16. Keep an accurate account of the time in a match.

CHAPTER XI

EFFECTS OF THE WEATHER

A. GENERAL.

1. Once a shooter has developed good positions and proper shooting techniques, effects of the weather are the primary cause of error in the strike of the bullet. The wind, mirage, light, rain and humidity all have some effect on the bullet, the shooter, or both.

2. In most international matches, each shooter is protected from the elements by an enclosed booth. In this situation, the shooter must primarily be concerned with the effects of the weather on the bullet itself.

3. However, since 1966, shooting booths are no longer required by the ISU. The only protection afforded a shooter in most instances, is a roof to shield him from the direct rays of the sun and rain. This leaves the shooter vulnerable to the wind, which is his greatest problem.

B. POSITION CHANGES.

1. A shooter firing without the protection of a booth will find that the effect of the wind blowing on him and his rifle must become his primary concern. The effect wind has on the bullet in flight is minor compared to its effect on the shooter's ability to hold on the aiming point.

2. When modifying positions for the wind, the shooter must remember not to violate the basic fundamentals of assuming the three positions. The muscles will be more tense than normal and must be consciously used to return the hold of the rifle back on the bull's-eye during lulls. The positions must be built to take advantage of bone and ligament support. A more aggressive and quicker trigger control may be used but the trigger is definitely not jerked.

3. The prone position is essentially uneffected except in an unusually strong wind. If this occurs the shooter may do one of two things depending on the type of prone position he has. Those shooters having a "loose" position will usually shorten the sling slightly to make the position tighter. Those shooters already having a tight position may lengthen the sling slightly, to lower the position, but not loosening it up. However in lowering the position, the shooter must take care not to change his position into one that is illegal.

4. There are two schools of thought as to what is the best method of firing the more unstable kneeling and standing positions in the wind.

a. Some shooters believe that regardless of the wind velocity, no changes should be made in their shooting positions. The technique is to remain in the aiming position and wait for a slight lull, reestablish the rifle hold on the bull's-eye and fire the shot. Other shooters feel that waiting for a lull is best in a moderate wind, but in a strong wind they deem it necessary to exercise greater control of the rifle muzzle.

b. Control of the rifle muzzle can be gained in the kneeling position by moving the fore-end stop out slightly, lengthening the sling, and leaning the torso forward towards the left knee. This forces more body weight into the rifle and left arm, hence dampening the rifle oscillations caused by wind.

c. In the standing position the palm rest may be moved forward slightly. The shooter must refrain from increasing the use of the left arm muscles to support the rifle. In order to maintain elevation and weight distribution, the shooter may spread his feet slightly more than normal. Often the grip of the right hand will be increased, and the shooter will use a more aggressive trigger control.

5. In international competition the positions must be shot in the sequence of prone, standing, and kneeling, but in many other matches the shooter is able to choose the order of firing each position.

a. If the shooter is in a booth and protected from the elements, it is most advantageous to fire the prone position during the period of the best conditions and shoot his standing position during the worst conditions. In the prone position the shooter is able to hold within the 10-ring and fire all 10's. Thus, any wind can only be detrimental and reduce the shooter's prone score. In the kneeling and standing positions even under ideal conditions, the shooter is unable to hold every shot within the 10-ring. He can attribute some of the poor shots to his lack of normal control. Also, under adverse conditions the shooter will not always be able to have the correct windage of his rifle. Thus, some of the shooter's 9's will be blown into the 10-ring and about the same number of 10's will be blown out of the 9-ring. As a result the shooter's score is not lowered appreciably by the worse conditions.

b. The reverse is true in those matches where the shooter is unprotected from the wind. The standing position should be fired under the best conditions and prone position in the worst. In this situation the shooter's prone score may be 5 to 10 points lower than normal. However, he may save as much as 20 to 30 points standing by not firing misses and other wide shots that are unavoidable when a strong wind is blowing on the shooter and his rifle.

C. SHOOTING IN THE WIND. There are generally three methods of shooting in varying wind conditions.

1. The first method is to "shoot fast and chase the last shot." This is the least favorable technique. This method is successful only while shooting prone when there is negligible wind or no wind. The changes in conditions that take place must occur slowly so that the shooter can actually fire two or more shots before a further change moves the impact of the shots to the 9-ring or worse. The shooter can thus see the shots impacting towards the 9-ring, indicating a change in occurring, and correct the sights for the next shot. The shooter may fire bad shots in haste and may lose several points if the conditions worsen before he realizes another method must be used.

2. A second method is to estimate the wind velocity change, correct the sights the prescribed amount and fire. An experienced shooter is capable of exceptional control in this method and may fire a fine score. Familiarity with the range and its peculiar conditions can be very important when shooting in this manner.

3. A third method is to select a single acceptable condition and shoot only when that condition exists. This is the slowest method, however, and the shooter must stay in position for long periods waiting for the repetition of the chosen condition.

4. The majority of experienced shooters will use a combination of estimating wind changes and shooting in a given type of condition. While shooting sighters, these shooters will select two or three conditions which occur frequently and note the differences between them. This allows them to change from one condition to another with a minimum amount of estimating wind changes, and is much faster than shooting in only one condition.

D. EFFECTS OF THE WIND.

1. A wind of constant velocity that changes direction will effect the bullet differently. To evaluate the wind, the shooter imagines himself in the center of a clock face and his target at 12 o'clock. Winds from 8-10 o'clock or 2-4 o'clock have the greatest effect on a bullet and are called "full value" winds. A wind of the same velocity as a full value wind, but blowing from 1, 5, 7 or 11 o'clock, will affect the bullet approximately half that of a full value wind. For this reason it is called a "half value" wind. A wind coming directly from 12 or 6 o'clock will require no windage correction and is referred to as a "no value" wind. However, a strong wind of this type may have a slight effect on the vertical displacement of the bullet.

2. Because of the clockwise spin of the bullet, the wind does not displace the bullet on a flat horizontal plane but in a diagonal direction from 10 to 4 o'clock. A wind coming from the right will cause the bullet to rise in addition to being shifted left. In a left wind the bullet drops as it is being blown to the right.

E. READING THE WIND. A great part of a shooter's success will depend upon how well he can recognize a given condition and the effect it will have upon the bullet. A proficient wind doper has experienced many long hours of practice. The first thing a shooter should do upon arriving at a range is to note the prevailing wind direction. In order for the shooter to have a sufficient span of a given uniform condition to fire a match, the wind condition the shooter chooses to fire under must occur quite frequently. Various wind indicators which the shooter may use include:

1. The direction of low clouds over the range and dust blowing on the range.

2. One of the best indicators for detecting wind changes are the wind flags properly placed between the shooter and his target. Many shooters use these flags exclusively for reading wind and are quite successful.

3. Mirage is used by many shooters as a check on movement of the wind.

4. Dust kicked up by the bullets hitting a dirt backstop are indicative of wind direction.

5. The muzzle smoke of the shooters on adjacent firing points can also be noticed easily and used advantageously.

F. EFFECTS OF LIGHT INTENSITY AND DIRECTION. Effects of the light are controversial. The intensity and direction of light affects different people in various ways. Therefore, only guide lines can be given as to what is correct for a shooter in a given light condition.

1. The well equipped shooter will have three sight filters or pairs of shooting glasses--clear, yellow, and grey or green. Generally, using the appropriate shade of glasses the shooter will be able to see equally clear on sunny or cloudy days. Most shooters prefer the yellow or clear glasses on dull or overcast days, and the grey or green glasses on sunny days. There is a widespread belief among shooters that on dark days, yellow glasses gather in more light and hence brighten up the target. THIS IS NOT TRUE! Shaded lenses of any color, including yellow, filter out some degree of available light. However, colored or shaded lenses may provide greater contrast thus producing a clearer and more distinct sight picture to the shooter.

2. The human eye can usually distinguish black against yellow easier than it can black against white. Thus, on a cloudy day when a shooter should not wear his grey or green sun glasses, he must determine which is best for him. Should he use yellow and have the more easily distinguished yellow-black sight picture and less total light entering his eye; or forego shaded lenses completely and have considerably more light entering his eye and use the slightly more difficult to distinguish white-black sight picture?

3. Under extreme conditions of near darkness or bright glare, changing glasses may not completely clear up the shooter's sight picture. Sometimes changing the rear sight aperture size will help. A slightly smaller size cuts down the total amount of light entering the eye on bright days, and a larger size will permit more light to reach the eye on dark days.

4. Shooters using a post front sight often will experience elevation changes on days of varying light intensity caused by intermittent cloudiness. When the sun is sighting, an apparent haze forms around the black bull's-eye causing the aim to be low. When the sun is shielded from the target, the haze is gone and the tendency is to hold closer to the black causing the shots to go higher. Sometimes, if the sun is extremely bright and shining directly on the face of the target, the black may tend to look smaller than it actually is. Because of the apparent reduction in aiming area, the shooter will unconsciously hold higher.

G. HUMIDITY AND RAIN.

1. To understand the effects of humidity, the shooter must realize that the higher the humidity, the denser the air. This heavier air presents more resistance to the flight of the bullet. The resulting change in velocity on a humid day will require an elevation sight change to hit the same location on the target as compared to a day when the humidity is lower.

2. Rain presents problems other than merely keeping equipment dry.

a. The rain has only slight effect on the trajectory of the bullet. A normal light shower will not affect the bullet, but during a heavy rain or downpour the shooter will find the sight elevation must be raised one or two clicks.

b. During a rain, the wind flags become wet and heavy and thus useless for detecting minor wind velocity changes. In a light rain small wind variations can be easily seen by watching the angle of the rain as it is falling. In a heavy rain, a large wind change may occur before the angle of the falling rain will be changed. The wise shooter in this situation will usually hold up firing if possible until he can once again detect the minor wind velocity changes.

c. Immediately following a rain, if a hot sun appears, the ground water will begin to evaporate, producing an extremely heavy mirage of high density air. Since the wind flags will remain wet for some time, the shooter must be cautious in determining the value of any wind changes.

H. MIRAGE. The word "mirage" refers to the heat waves or the reflection of light through layers of air of different temperature and density as seen by the naked eye on a warm bright day. With the telescope some mirage can be seen on all but the coldest days.

1. As observed through the telescope, the mirage will appear to move with the same velocity as the wind, except when blowing straight into or away from the scope. The mirage then will give the appearance of moving straight up with no lateral movement. This is termed a "boiling" mirage.

2. An important effect of mirage is the light diffraction caused by the uneven air densities characteristic of heat waves. Depending on atmospheric conditions, this diffraction will cause a displacement of the target image in the direction of the movement of the mirage. Thus, if a mirage is moving from left to right, the target will appear to be slightly to the right of its actual location. Since the shooter can only aim at the image received by his eye, he will actually aim at a point which is offset slightly from the center of the target. This error will be in addition to the displacement of the bullet caused by the wind.

3. An additional effect of mirage can be detected on an intermittent cloudy day. The shooter will note that when a cloud obscures the sun the mirage will start to dissipate. Although the wind velocity has remained constant as shown by the wind flags, his shots will no longer be centered but displaced in the direction from which the mirage was coming.

4. Proper reading of the mirage will enable a shooter to estimate and make windage corrections with a high degree of accuracy. However, at 50 meters, few shooters use mirage as the sole means of determining the effective wind. Unless it is a very hot day and the sun is shining brightly, at this short distance it is usually quite difficult to see enough mirage to accurately determine its minor velocity changes. Watch the wind flags!

5. In the prone position, where the shooter is able to hold within the 10-ring indefinitely, the mirage is sometimes used as a double check with the wind flags for highly accurate wind reading. In the kneeling and standing position the shooter cannot hold within the 10-ring for extended periods. It is detrimental to performance to spend time while in the aiming position studying mirage when wind variations are quite easily detected by the many small wind flags. Usually in these positions, mirage is checked only for its direction if there is not enough wind to disturb the wind flags and the mirage is alternately drifting from left and right.

6. The best way to learn to read mirage is to practice in varying wind conditions on days when mirage is easily visible. In general, the shallower the waves of the mirage the faster the velocity and resultant wind speed. Changes in wind velocity can be determined by observation of the mirage up to speeds of approximately 12 mph. Beyond this speed the movement of the mirage is too fast for detection of minor variations.

7. Mirage is located by focusing the spotting scope several yards short of the target. The target will appear slight fuzzy but not so far out of focus that the shot value cannot be determined by looking at the black portion of the target.

I. SHADING. A discussion of wind and weather conditions would not be complete unless the technique of shading or holding over were discussed. Shading is a technique of allowing for wind change by deliverately holding over or aligning the front sight toward the direction of the wind in order to compensate for the change without making a sight adjustment. Sometimes this technique can be beneficial to the very experienced shooter during a constantly changing condition and or when it is necessary to shoot a large number of shots in a relatively short period of time. This could also occur when a shooter does not have time to wait for a particular condition or can not return to the sighting target frequently. Shading may also be beneficial when the shooter senses a slight wind change and then is careful not to break the shot on the windward side of the target. In a sense he is shading or is being careful to break the shot into the wind so that any pickup or drop off in wind velocity will cause the bullet to drift into the ten-ring. Shading is not recommended because even the most experienced shooter will have difficulty judging how far to shade or hold off. Shading also increases the possibility of elevation error due to the fact that the bull's-eye is off center in the front aperture.

CHAPTER XII

COACHING

A. PURPOSE. This chapter is written for the benefit of those individuals in international shooting who may find themselves facing the job of coaching an international rifle team with little or no international marksmanship background to draw upon. This chapter should also be of value to those persons who are in a position to appoint coaches. You may also be called upon to coach a champion shooter.

1. The champion shooter is the cutting instrument that penetrates through and beyond the bounds of what is presently considered the best possible shooting performance. The coach is the tool that hones this superb instrument and keeps it razor sharp. The coach can keep the champion shooter continually striving to break the existing records. The score that equals or breaks a previous record is never good enough to stand unbroken for the years to come.

2. A coach exists for the benefit of his shooters, and not the shooters for the benefit of the coach. The coach's job is to direct the shooter in his own development. His most important function is to make the shooter think.

B. PRINCIPLES OF COACHING. Coaching clinics have revealed that very few individuals are familiar with the principles involved in coaching a free-rifle shooter.

Many of the shooter's ideas must be influenced by personal and individual coaching. In general, positive influences can best be made by an individual coach in whom the shooter has a great deal of confidence.

1. First we must recognize that the basic principles and fundamentals of marksmanship do not change. However, the application of those principles and fundamentals will differ from shooter to shooter, and from one weapon to the next.

2. We must recognize also that the style and techniques of coaching will differ as we move from service rifle and pistol to the more individualistic free-rifle type of shooting. This is because the free rifle shooter is trained for individual performance; he never fires as a team member in the same sense that service rifle and pistol shooters do. Consequently, one of the foremost responsiblities as a free-rifle coach is to instill self-reliance and confidence in his shooters.

3. A difficult coaching task is to create an atmosphere in which each individual shooter can experiment with and refine his own techniques. The progress made by a shooter in advancing his score is in direct proportion to his thinking about and analyzing his own performance. He must have, as well, the desire to be a World or Olympic Champion.

4. The coach is aided in creating confidence in the team as a whole if he carefully uses the performance of his shooters for purposes of research and analysis. He should constantly watch the performance of those shooters who are "on top", and he should seek the advice and counsel of those top shooters. Then, armed with a knowledge of the techniques employed by the best shooters, he should acquaint each new shooter with these techniques. Teach him to adopt the techniques that work best for him, and to discard the methods that are unsound. The coach must be careful to prevent his shooters from using "gimmicks"--easy solutions in the form of novel equipment or trick techniques. Inevitably some shooters will begin to rely on gimmicks and fail to concentrate on basic improvement of their performance. The use of gimmicks may become the basis for the development of alibis. Excuses for poor performance will then cause confidence to dwindle away. On the other hand, if the coach keeps his shooters concentrating on performance, and aids their progress by displaying a sound knowledge of shooting techniques, then he is building confidence. A coach bears the responsiblity of creating the right amount or maximum of confidence in each shooter.

ANNEX 1

THE UNITED STATES IN WORLD COMPETITION

A. After World War II, the United States reentered international competition for the first time at the 1948 London Olympics. Considering the difficulties that the United States shooters were forced to overcome, they did a commendable job in representing their country.

B. The majority of American rifle matches have always been held according to American rules and using American targets. Such a great difference exists between our domestic competitions and true international matches, as conducted by other countries of the world, that the transition between the two is not performed without handicapping our shooters.

C. International rifle competition is not a sport that lends itself easily to world domination by a single country. For the most part the medals are shared among a small number of shooting minded nations. The United States along with the U.S.S.R., East and West Germany, Switzerland and the Scandanavian countries are among the top medal winners.

D. In 1956 the United States Army established a Marksmanship Training Unit at Fort Benning, Georgia. A special section was designated to develop a team to train for international rifle shooting. Through the years the personnel of this section have studied and worked on the techniques of ISU shooting.

E. Prior to 1964 the U.S. was primarily a prone oriented country with only a few position shooters capable of winning in world position competition. At Tokyo, Japan, in 1964, however, the U.S. came closer to medal domination of rifle shooting than in any prior year. Since that time we have won more medals in Olympic competion than any other nation.

F. The match results that follow will verify the success that the shooters have attained and the important role that the unit has played in establishing the United States as the dominating power in rifle marksmanship that it is today. Since its inception the unit has been responsible for winning 88% of all medals won in international rifle competition by the United States of America.

G. A nucleus of competitive talent has been formed and these people have been instrumental in successfully representing their country and in teaching their methods to newer shooters everywhere. It is hoped that the information contained in this manual will benefit even a greater number of shooters and that a never ending flow of top notch marksmen will be produced to represent their country.

U.S. MEDAL WINNERS IN INTERNATIONAL RIFLE COMPETITION FROM 1948 THRU 1972

COMPETITOR	GOLD	SILVER	BRONZE	TOTAL
*GARY ANDERSON	25	6	6	37
*VERLE WRIGHT	12	9	5	26
*LONES WIGGER	11	10	2	23
*DANIEL PUCKEL	10	8	4	22
ARTHUR JACKSON	12	2	5	19
*JOHN WRITER	8	8	1	17
*TOMMY POOL	5	5	6	16
*JOHN FOSTER	7	7	1	15
*MARGARET MURDOCK	11	3	1	15
EMMET SWANSON	4	1	6	11
ARTHUR COOK	5	4	0	9
DAVID BOYD	5	4	0	9
AGUST WESTER GAARD	4	1	4	9
JOHN CARTER	5	2	1	8
*WILLIAM KRILLING	4	1	2	7
*LANNY BASSHAM	1	4	0	5
*DONALD ADAMS	3	0	1	4
*MARTIN GUNNARSSON	2	0	2	4
ROBERT SANDAGER	1	1	2	4
JAMES HILL	0	2	2	4
VIC AUER	2	1	0	3
GORDON TARAS	0	1	2	3
*BRUCE MEREDITH	2	1	0	3
ALLAN LUKE	2	0	0	2
*PRESLEY KENDALL	1	1	0	2
RHODY NORNBERG	1	1	0	2
*DAVID ROSS	2	0	0	2
EDWARD CAYGLE	1	0	1	2
*JOHN HERR	0	1	1	2
PATRICIA FOSTER	1	1	0	2
*CLIFFORD DAVIS	1	0	0	1
*JOHN WATKINS	1	0	0	1
DIANA TIMBERLAKE	1	0	0	1
*EUGENE SPRADLIN	1	0	0	1
MARIANNE JENSEN	0	1	0	1
WALTER TOMSEN	0	1	0	1
JOHN BERTVA	1	0	0	1
*JAMES EBERWINE	1	0	0	1

*Indicates member of the United States Army Marksmanship Training Unit, Fort Benning, Georgia.

MEDALS WON BY THE UNITED STATES OF AMERICA

	EVENTS		GOLD		SILVER		BRONZE		TOTAL
	Ind	Tm	Ind	Tm	Ind	Tm	Ind	Tm	
1972 Olympics - Munich, West Germany	3	0	2	0	2	0	0	0	4
1971 Pan American Games - Cali, Columbia	2	2	2	2	1	0	0	0	5
1970 World Championships - Phoenix, Arizona	14	14	4	4	4	6	3	0	21
1968 Olympics - Mexico City, Mexico	3	0	1	0	1	0	0	0	2
1967 Pan American Games - Winnipeg, Canada	2	2	1	2	1	0	1	0	5
1966 World Champs - Wiesbaden, W. Germany	13	9	7	5	3	1	3	2	21
1964 Olympics - Tokyo, Japan	3	0	2	0	1	0	2	0	5
1963 Pan American Games - Sao Paulo, Brazil	3	3	2	3	3	0	1	0	9
1962 World Champs - Cairo, United Arab Rep.	12	6	5	1	1	3	4	1	15
1960 Olympics - Rome, Italy	3	0	0	0	1	0	0	0	1
1959 Pan American Games - Chicago, USA	9	6	8	5	6	1	2	0	22
1958 World Championships - Moscow, Russia	11	8	2	0	2	1	3	1	9
1956 Olympics - Melbourne, Australia	3	0	0	0	0	0	0	0	0
1955 Pan Am Games - Mexico City, Mexico	4	4	2	3	0	0	3	1	9
1954 World Champs - Caracas, Venezuela	10	7	0	1	0	0	1	0	2
1952 Olympics - Helsinki, Finland	3	3	0	0	0	0	1	0	1
1952 World Championships - Oslo, Norway	10	7	2	1	1	0	3	1	8
1951 Pan Am Games - Buenos Aires, Argentina	4	4	2	0	2	0	0	0	4
1949 World Champs - Buenos Aires, Argentina	11	8	2	0	1	1	0	1	5
1948 Olympics - London, England	2	0	1	0	1	0	0	0	2

The USA reentered world rifle competition in 1948 for the first time since before WWII.
The USA did not enter the team matches in the 1951 Pan American Games.

1972 OLYMPICS - MUNICH, WEST GERMANY

Individual Medals

	Gold	Silver	Bronze
English Match	NORTH KOREA	USA (1)	HUNGARY
Smallbore 3-Position	USA (4)	USA (2)	EAST GERMANY
Free Rifle 3-Position	USA (3)	USSR	HUNGARY

Three of the four shooters on the United States Olympic Rifle Team were members or former members of the USAMKTU.

1.	VIC AUER	(CIV)	1 Silver
2.	LANNY BASSHAM	(USAMKTU)	1 Silver
3.	LONES WIGGER	(USAMKTU)	1 Gold
4.	JOHN WRITER	(EX-USAMKTU)	1 Gold

1971 PAN AMERICAN GAMES - CALI, COLUMBIA

Individual Medals

	Gold	Silver	Bronze
English Match	USA (1)	Cuba	Puerto Rico
Smallbore 3-Position	USA (8)	USA (7)	Cuba

Team Medals

	Gold	Silver	Bronze
English Match	USA (1, 4, 5, 6)	Cuba	Puerto Rico
Smallbore 3-Position	USA (2, 3, 7, 8)	Cuba	Argentina

Six of the eight shooters on the United States Rifle Team were members or former members of the USAMKTU.

1.	VIC AUER	(CIVILIAN)	2 Gold
2.	LANNY BASSHAM	(USAMKTU)	1 Gold
3.	DAVID BOYD	(USMC)	1 Gold
4.	CLIFF DAVIS	(USAMKTU)	1 Gold
5.	DAVID ROSS	(EX-USAMKTU)	1 Gold
6.	JOHN WATKINS	(EX-USAMKTU)	1 Gold
7.	LONES WIGGER	(USAMKTU)	1 Gold, 1 Silver
8.	JOHN WRITER	(EX-USAMKTU)	2 Gold

1970 WORLD CHAMPIONSHIPS - PHONEIX, ARIZONA

Individual Medals

	Gold	Silver	Bronze
English Match	SOUTH AFRICA	FINLAND	WEST GERMANY
Snallbore 3-Position	USSR	USA (12)	USA (11)
Smallbore Kneeling	SWITZERLAND	AUSTRIA	SWEDEN
Smallbore Standing	USSR	CZECHOSLOVAKIA	USA (12)
Free Rifle 3-Position	USSR	USA (3)	USSR
Free Rifle Prone	SWITZERLAND	USA (11)	FINLAND
Free Rifle Kneeling	HUNGARY	USSR	CZECHOSLOVAKIA
Free Rifle Standing	USA (8)	USA (3)	USA (12)
Fullbore Standard Rifle	USA (3)	USSR	USSR
Smallbore Standard Rifle	USA (12)	POLAND	EAST GERMANY
Air Rifle	WEST GERMANY	WEST GERMANY	SWEDEN
English Match (Women)	YUGOSLAVIA	SOUTH AFRICA	SWEDEN
Smallbore Standard Rifle (Women)	USA (8)	YUGOSLAVIA	USSR
Air Rifle (Women)	USSR	YUGOSLAVIA	USSR

Team Medals

	Gold	Silver	Bronze
English Match	ITALY	ROMANIA	YUGOSLAVIA
Smallbore 3-Position	USSR	USA (2, 3, 11, 12)	WEST GERMANY
Smallbore Kneeling	USSR	USA (2, 3, 11, 12)	WEST GERMANY
Smallbore Standing	USA (2, 3, 11, 12)	USSR	EAST GERMANY
Free Rifle 3-Position	USA (3, 8, 11, 12)	USSR	CZECHOSLOVAKIA
Free Rifle Prone	SWITZERLAND	USSR	FINLAND
Free Rifle Kneeling	USSR	USA (3, 8, 11, 12)	SWITZERLAND
Free Rifle Standing	USA (3, 8, 11, 12)	USSR	CZECHOSLOVAKIA
Fullbore Standard Rifle	USSR	USA (1, 3, 7, 11)	POLAND
Smallbore Standard Rifle	USSR	USA (1, 2, 11, 12)	CZECHOSLOVAKIA
Air Rifle	WEST GERMANY	USA (1, 2, 3, 11)	EAST GERMANY
English Match (Women)	YUGOSLAVIA	WEST GERMANY	USSR
Smallbore Standard Rifle (Women)	USA (4, 8, 9)	USSR	EAST GERMANY
Air Rifle (Women	YUGOSLAVIA	USSR	WEST GERMANY

Eight of the twelve shooters on the United States Rifle Team were members or former members of the USAMKTU.

1.	LANNY BASSHAM	(USAMKTU)	3 Silver
2.	DAVID BOYD	(USMC)	1 Gold, 4 Silver
3.	JOHN FOSTER	(USAMKTU)	4 Gold, 7 Silver
4.	TRICIA FOSTER	(CIV)	1 Gold
5.	BARBARA HAMPSON	(CIV)	
6.	DAVID KIMES	(EX-USAMKTU)	
7.	BRUCE MEREDITH	(EX-USAMKTU)	1 Silver
8.	MARGARET MURDOCK	(EX-USAMKTU)	5 Gold, 1 Silver
9.	DIANA TIMBERLAKE	(CIV)	1 Gold
10.	JOHN WATKINS	(EX-USAMKTU)	
11.	LONES WIGGER	(USAMKTU)	3 Gold, 7 Silver, 1 Bronze
12.	JOHN WRITER	(EX-USAMKTU)	4 Gold, 5 Silver, 2 Bronze

1968 OLYMPICS - MEXICO CITY, MEXICO

Individual Medals

	Gold	Silver	Bronze
English Match	CZECHOSLOVAKIA	HUNGARY	NEW ZEALAND
Smallbore 3-Position	WEST GERMANY	USA (4)	USSR
Free Rifle 3-Position	USA (1)	USSR	SWITZERLAND

All four shooters on the United States Rifle Team are members or former members of the USAMKTU.

1.	GARY ANDERSON	(EX-USAMKTU)	1 Gold
2.	JOHN FOSTER	(USAMKTU)	
3.	LONES WIGGER	(USAMKTU)	
4.	JOHN WRITER	(USAMKTU)	1 Silver

1967 PAN AMERICAN GAMES - WINNIPEG, CANADA

Individual Medals

	Gold	Silver	Bronze
English Match	CANADA	USA (4)	MEXICO
Smallbore 3-Position	USA (7)	CANADA	USA (1)

Team Medals

	Gold	Silver	Bronze
English Match	USA (1, 3, 4, 6)	CANADA	MEXICO
Smallbore 3-Position	USA (1, 3, 7, 8)	CANADA	MEXICO

Five of the eight shooters on the United States Rifle Team were members or former members of the U.S. Army MTU.

1.	GARY ANDERSON	(EX-USAMKTU)	2 Gold, 1 Bronze
2.	DAVID BOYD	(USMC)	
3.	BRUCE MEREDITH	(USAMKTU)	2 Gold
4.	RHODY NORNBERG	(USAF)	1 Gold, 1 Silver
5.	ROBERT RANDLE	(USAF)	
6.	DAVID ROSS	(EX-USAMKTU)	1 Gold
7.	MARGARET THOMPSON	(USAMKTU)	2 Gold
8.	JOHN WRITER	(USAMKTU)	1 Gold

1966 WORLD CHAMPIONSHIPS - WIESBADEN, WEST GERMANY

Individual Medals

	Gold	Silver	Bronze
English Match	USA (3)	POLAND	USA (9)
Smallbore 3-Position	USA (2)	USSR	POLAND
Smallbore Kneeling	USSR	USSR	SO. AFRICA
Smallbore Standing	USA (2)	EAST GERMANY	EAST GERMANY
Free Rifle 3-Position	USA (2)	USSR	USA (4)
Free Rifle Prone	SWEDEN	NORWAY	USSR
Free Rifle Kneeling	USA (4)	USSR	SWEDEN
Free Rifle Standing	SWITZERLAND	USA (2)	USSR
Army Rifle	USSR	USSR	USA (2)
Standard Rifle	USA (1)	USA (2)	EAST GERMANY
Air Rifle	WEST GERMANY	SWITZERLAND	HUNGARY
English Match (Women)	POLAND	USA (11)	HUNGARY
Standard Rifle (Women)	USA (11)	WEST GERMANY	USSR

Team Medals

	Gold	Silver	Bronze
English Match	USA (1, 3, 9, 12)	POLAND	USSR
Smallbore 3-Position	USA (2, 10, 11, 12)	USSR	EAST GERMANY
Smallbore Kneeling	USA (2, 10, 11, 12)	USSR	POLAND
Smallbore Standing	EAST GERMANY	USSR	USA (2, 10, 11, 12)
Free Rifle 3-Position	USA (2, 4, 11, 12)	RUSSIA	SWITZERLAND
Army Rifle	USSR	SWITZERLAND	USA (1, 2, 5, 9)
Standard Rifle	USA (1, 2, 4, 9)	USSR	EAST GERMANY
Air Rifle	SWITZERLAND	WEST GERMANY	USSR
English Match (Women)	POLAND	USA (6, 8, 11)	HUNGARY

Nine of the twelve shooters on the United States Rifle Team were members or former members of The U.S. Army MTU.

1.	DONALD ADAMS	(TUSAMTU)	3 Gold, 1 Bronze
2.	GARY ANDERSON	(EX-TUSAMTU)	7 Gold, 2 Silver, 3 Bronze
3.	DAVID BOYD	(USMC)	2 Gold
4.	JOHN FOSTER	(TUSAMTU)	3 Gold, 1 Bronze
5.	MARTIN GUNNARSSON	(TUSAMTU)	1 Bronze
6.	MARIANNE JENSEN	(CIV)	1 Silver
7.	DAVID KIMES	(TUSAMTU)	
8.	PATRICIA KINSELLA	(CIV)	1 Silver
9.	WILLIAM KRILLING	(TUSAMTU)	2 Gold, 2 Bronze
10.	TOMMY POLL	(TUSAMTU)	2 Gold, 1 Bronze
11.	MARGARET THOMPSON	(TUSAMTU)	4 Gold, 2 Silver, 1 Bronze
12.	LONES WIGGER	(TUSAMTU)	4 Gold, 1 Bronze

1964 OLYMPICS - TOKYO, JAPAN

Individual Medals

	Gold	Silver	Bronze
English Match	HUNGARY	USA (4)	USA (3)
Smallbore 3-Position	USA (4)	BULGARIA	HUNGARY
Free Rifle	USA (1)	USSR	USA (2)

All four shooters on the United States Rifle Team were members of The U.S. Army MTU.

1.	GARY ANDERSON	(USAMTU)	1 Gold
2.	MARTIN GUNNARSSON	(USAMTU)	1 Bronze
3.	TOMMY POOL	(USAMTU)	1 Bronze
4.	LONES WIGGER	(USAMTU)	1 Gold, 1 Silver

1963 PAN AMERICAN GAMES - SAO PAULO, BRAZIL

Individual Medals

	Gold	Silver	Bronze
English Match	VENEZUELA	USA (7)	USA (4)
Smallbore 3-Position	USA (1)	USA (6)	MEXICO
Free Rifle	USA (1)	USA (8)	CANADA

Team Medals

	Gold	Silver	Bronze
English Match	USA (1, 4, 6, 7)	MEXICO	VENEZUELA
Smallbore 3-Position	USA (1, 3, 6, 8)	CANADA	PERU
Free Rifle	USA (1, 2, 5, 8)	ARGENTINA	BRAZIL

Five of the eight shooters on the United States Rifle Team were members of The U.S. Army MTU.

1.	GARY ANDERSON	(TUSAMTU)	5 Gold
2.	JOHN BERTUA	(USAF)	1 Gold
3.	DAVID BOYD	(USMC)	1 Gold
4.	EDWARD CAYCLE	(USAF)	1 Gold, 1 Bronze
5.	MARTIN GUNNARSSON	(TUSAMTU)	1 Gold
6.	WILLIAM KRILLING	(TUSAMTU)	2 Gold, 1 Silver
7.	LONES WIGGER	(TUSAMTU)	1 Gold, 1 Silver
8.	VERLE WRIGHT	(TUSAMTU)	2 Gold, 1 Silver

1962 WORLD CHAMPIONSHIPS - CAIRO, UNITED ARAB REPUBLIC

Individual Medals

	Gold	Silver	Bronze
English Match	WEST GERMANY	USSR	USA (6)
Smallbore 3-Position	USA (1)	USSR	SWITZERLAND
Smallbore Kneeling	WEST GERMANY	USSR	DENMARK
Smallbore Standing	USA (1)	SWITZERLAND	USA (7)
Free Rifle 3-Position	USA (1)	USSR	USA (7)
Free Rifle Prone	USA (1)	SWITZERLAND	SWEDEN
Free Rifle Kneeling	SWITZERLAND	SWITZERLAND	USSR
Free Rifle Standing	USA (7)	HUNGARY	USA (8)
Army Rifle (Slow)	FINLAND	USA (9)	USSR
Army Rifle (Rapid)	SWITZERLAND	SWITZERLAND	SWITZERLAND
English Match (Women)	USSR	SOUTH AFRICA	WEST GERMANY
Smallbore 3-Position (Women)	USSR	USSR	EAST GERMANY

Team Medals

	Gold	Silver	Bronze
English Match	SWEDEN	USA (1, 4, 6, 9)	WEST GERMANY
Smallbore 3-Position	USSR	USA (1, 7, 8, 9)	SWITZERLAND
Smallbore Kneeling	USSR	WEST GERMANY	USA (1, 6, 7, 8)

	Gold	Silver	Bronze
Smallbore Standing	USA (1, 7, 8, 9)	SWITZERLAND	EAST GERMANY
Free Rifle 3-Position	USSR	USA (1, 7, 8, 9)	SWITZERLAND
Army Rifle	USSR	NORWAY	FINLAND

Five of the nine shooters on the United States Rifle Team were members of The U. S. Army MTU.

1.	GARY ANDERSON	(TUSAMTU)	5 Gold, 3 Silver, 1 Bronze
2.	JANET FRIDDELL	(CIV)	
3.	MARIANNE JENSEN	(CIV)	
4.	PRESLEY KENDALL	(TUSAMTU)	1 Silver
5.	JOHN BERTUA	(USAF)	
6.	JAMES HILL	(USMC)	1 Silver, 2 Bronze
7.	TOMMY POOL	(TUSAMTU)	2 Gold, 2 Silver, 3 Bronze
8.	DANIEL PUCKEL	(TUSAMTU)	1 Gold, 2 Silver, 2 Bronze
9.	VERLE WRIGHT	(TUSAMTU)	1 Gold, 4 Silver

1960 OLYMPICS - ROME, ITALY

Individual Medals

	Gold	Silver	Bronze
English Match	WEST GERMANY	USA (3)	VENEZUELA
Smallbore 3-Position	USSR	USSR	WEST GERMANY
Free Rifle	AUSTRIA	SWITZERLAND	USSR

Three of the four shooters on the United States Rifle Team were members of The U.S. Army MTU.

1.	GARY ANDERSON	(TUSAMTU)	
2.	JOHN FOSTER	(TUSAMTU)	
3.	JAMES HILL	(USMC)	1 Silver
4.	DANIEL PUCKEL	(TUSAMTU)	

1959 PAN AMERICAN GAMES - CHICAGO, USA

Individual Medals

	Gold	Silver	Bronze
English Match	USA (3)	MEXICO	PERU
Smallbore 3-Position	USA (8)	CANADA	USA (1)
Smallbore Prone	CANADA	USA (10)	CANADA
Smallbore Kneeling	USA (2)	USA (8)	CANADA
Smallbore Standing	USA (2)	USA (8)	CANADA
Free Rifle 3-Position	USA (8)	USA (7)	ARGENTINA
Free Rifle Prone	USA (8)	USA (7)	CANADA
Free Rifle Kneeling	USA (8)	USA (7)	ARGENTINA
Free Rifle Standing	USA (8)	ARGENTINA	USA (7)

Team Medals

	Gold	Silver	Bronze
English Match	USA (3, 4, 5, 6)	PERU	CANADA
Smallbore 3-Position	USA (1, 2, 8, 10)	ARGENTINA	CANADA
Smallbore Prone	CANADA	USA (1, 2, 8, 10)	PERU
Smallbore Kneeling	USA (1, 2, 8, 10)	ARGENTINA	CANADA
Smallbore Standing	USA (1, 2, 8, 10)	ECUADOR	ARGENTINA
Free Rifle	USA (1, 7, 8, 9)	ARGENTINA	PERU

Nine of the ten shooters on the United States Rifle Team were members of The U.S. Army MTU.

1.	GARY ANDERSON	(TUSAMTU)	4 Gold, 1 Silver, 1 Bronze
2.	JAMES CARTER	(TUSAMTU)	5 Gold, 1 Silver
3.	ARTHUR COOK	(CIV)	2 Gold
4.	JAMES EBERWINE	(TUSAMTU)	1 Gold
5.	MARTIN GUNNARSSON	(TUSAMTU)	1 Gold
6.	PRESLEY KENDALL	(TUSAMTU)	1 Gold
7.	TOMMY POOL	(TUSAMTU)	1 Gold, 3 Silver, 1 Bronze
8.	DANIEL PUCKEL	(TUSAMTU)	9 Gold, 3 Silver
9.	EUGENE SPRADLIN	(TUSAMTU)	1 Gold
10.	VERLE WRIGHT	(TUSAMTU)	3 Gold, 2 Silver

1958 WORLD CHAMPIONSHIPS - MOSCOW, RUSSIA

Individual Medals

	Gold	Silver	Bronze
English Match	FINLAND	BULGARIA	GREAT BRITAIN
Smallbore 3-Position	USSR	USSR	USSR
Smallbore Prone	GREAT BRITAIN	USSR	USA (10)
Smallbore Kneeling	FINLAND	USSR	BELGIUM
Smallbore Standing	USSR	USSR	USA (11)
Free Rifle 3-Position	FINLAND	USA (8)	FINLAND
Free Rifle Prone	USA (11)	FINLAND	USA (8)
Free Rifle Kneeling	USA (11)	USA (8)	FINLAND
Free Rifle Standing	ROMANIA	FINLAND	WEST GERMANY
Army Rifle (Slow)	USSR	USSR	USSR
Army Rifle (Rapid)	USSR	CZECHOSLOVAKIA	USSR

Team Medals

	Gold	Silver	Bronze
English Match	USSR	FINLAND	GREAT BRITAIN
Smallbore 3-Position	USSR	WEST GERMANY	USA (3, 6, 8, 10, 11)
Smallbore Prone	GREAT BRITAIN	ROMANIA	USSR
Smallbore Kneeling	USSR	USA (3, 6, 8, 10, 11)	CZECHOSLO-VAKIA
Smallbore Standing	USSR	HUNGARY	FINLAND
Free Rifle 3-Position	USSR	FINLAND	HUNGARY
Army Rifle (Slow)	USSR	YUGOSLAVIA	FINLAND
Army Rifle (Rapid)	USSR	CZECHOSLOVAKIA	NORTH KOREA

Seven of the eleven shooters on the United States Rifle Team were members of The U. S. Army MTU.

1.	JUSTUS ALLEN	(TUSAMTU)	
2.	FRANK BRIGGS	(USMC)	
3.	JAMES CARTER	(TUSAMTU)	1 Silver, 1 Bronze
4.	EMMETT DUNCAN	(USMC)	
5.	JAMES EBERWINE	(TUSAMTU)	
6.	JOHN HERR	(TUSAMTU)	1 Silver, 1 Bronze
7.	JAMES HILL	(USMC)	
8.	DANIEL PUCKEL	(TUSAMTU)	3 Silver, 2 Bronze
9.	WILLIAM RABENSTEIN	(TUSAMTU)	
10.	GORDON TARAS	(CIV)	1 Silver, 2 Bronze
11.	VERLE WRIGHT	(TUSAMTU)	2 Gold, 1 Silver, 2 Bronze

1956 OLYMPICS - MELBOURNE, AUSTRALIA

Individual Medals

	Gold	Silver	Bronze
English Match	CANADA	USSR	CANADA
Smallbore 3-Position	USSR	CZECHOSLOVAKIA	SWEDEN
Free Rifle	USSR		FINLAND

To of the four members of the United States Rifle Team were members of The U.S. Army MTU.

1.	ARTHUR JACKSON	(CIV)
2.	JAMES SMITH	(CIV)
3.	HERBERT VOELCKER	(TUSAMTU)
4.	VERLE WRIGHT	(TUSAMTU)

1955 PAN AMERICAN GAMES - MEXICO CITY, MEXICO

Individual Medals

	Gold	Silver	Bronze
English Match	USA (1)	CHILE	MEXICO
Smallbore 3-Position	USA (1)	ARGENTINA	USA (6)
Free Rifle	ARGENTINA	ARGENTINA	USA (4)
Army Rifle	ARGENTINA	CHILE	USA (4)

Team Medals

	Gold	Silver	Bronze
English Match	USA (1, 2, 4, 5)	CHILE	MEXICO
Smallbore 3-Position	USA (1, 2, 4, 5, 6)	ARGENTINA	MEXICO
Free Rifle	USA (1, 3, 4, 5, 6)	ARGENTINA	VENEZUELA
Army Rifle	CHILE	ARGENTINA	USA (1, 3, 4, 5, 6)

There were six shooters on the United States Rifle Team.

1.	ARTHUR JACKSON	(CIV)	5 Gold, 1 Bronze
2.	ALLAN LUKE	(USAF)	2 Gold
3.	ROBERT SANDAGER	(CIV)	1 Gold, 1 Bronze
4.	EMMET SWANSON	(CIV)	3 Gold, 3 Bronze
5.	AUGUST WESTERGAARD	(CIV)	3 Gold, 1 Bronze
6.	VERLE WRIGHT	(CIV)	2 Gold, 2 Bronze

1954 WORLD CHAMPIONSHIPS - CARACAS, VENEZUELA

Individual Medals

	Gold	Silver	Bronze
English Match	CANADA	SWEDEN	USA (9)
Smallbore 3-Position	USSR	USSR	FINLAND
Smallbore Prone	USSR	SWEDEN	NORWAY
Smallbore Kneeling	USSR	USSR	USSR
Smallbore Standing	USSR	USSR	SWEDEN
Free Rifle 3-Position	USSR	USSR	FINLAND
Free Rifle Prone	USSR	USSR	SWITZERLAND
Free Rifle Kneeling	USSR	SWEDEN	FINLAND
Free Rifle Standing	USSR	SWITZERLAND	USSR
Army Rifle	SWEDEN	SWEDEN	COLOMBIA

Team Medals

	Gold	Silver	Bronze
English Match	USA (1, 3, 9, 10)	SWEDEN	USSR
Smallbore 3-Position	USSR	SWEDEN	NORWAY
Smallbore Prone	SWEDEN	NORWAY	USSR
Smallbore Kneeling	USSR	SWEDEN	NORWAY
Smallbore Standing	USSR	NORWAY	SWITZERLAND
Free Rifle 3-Position	USSR	SWITZERLAND	SWEDEN
Army Rifle	SWEDEN	YUGOSLAVIA	FINLAND

There were ten shooters on the United States Rifle Team.

1.	ARTHUR COOK	(CIV)	1 Gold
2.	E. O. FRANZEN	(CIV)	
3.	ARTHUR JACKSON	(CIV)	1 Gold
4.	ALLAN LUKE	(USAF)	
5.	WILLIAM McAULIFFE	(CIV)	
6.	ROBERT SANDAGER	(CIV)	
7.	JAMES SMITH	(USMC)	
8.	EMMET SWANSON	(CIV)	
9.	AUGUST WESTERGAARD	(CIV)	1 Gold, 1 Bronze
10.	VERLE WRIGHT	(CIV)	1 Gold

1952 OLYMPICS - HELSINKI, FINLAND

Individual Medals

	Gold	Silver	Bronze
Smallbore Prone	ROMANIA	USSR	USA (1)
Smallbore 3-Position	NORWAY	FINLAND	USSR
Free Rifle	USSR	SWITZERLAND	USSR

There were three shooters on the United States Rifle Team.

1.	ARTHUR JACKSON	(CIV)	1 Bronze
2.	ROBERT SANDAGER	(CIV)	
3.	EMMET SWANSON	(CIV)	

1952 WORLD CHAMPIONSHIPS - OSLO, NORWAY

Individual Medals

	Gold	Silver	Bronze
English Match	USA (2)	USA (6)	SWEDEN
Smallbore 3-Position	NORWAY	SWITZERLAND	NORWAY
Smallbore Prone	USA (2)	DENMARK	USA (1)
Smallbore Kneeling	FINLAND	NORWAY	USA (4)
Smallbore Standing	NORWAY	SWITZERLAND	SWITZERLAND
Free Rifle 3-Position	SWITZERLAND	FINLAND	SWITZERLAND
Free Rifle Prone	FINLAND	FINLAND	SWITZERLAND
Free Rifle Kneeling	FINLAND	SWITZERLAND	SWITZERLAND
Free Rifle Standing	SWEDEN	SWITZERLAND	FINLAND
Army Rifle	SWITZERLAND	SWEDEN	USA (2)

Team Medals

	Gold	Silver	Bronze
English Match	USA (1, 2, 4, 6)	NORWAY	WEST GERMANY
Smallbore 3-Position	SWITZERLAND	SWEDEN	NORWAY
Smallbore Prone	SWITZERLAND	NORWAY	USA (1, 2, 4, 5, 6)
Smallbore Kneeling	SWEDEN	SWITZERLAND	NORWAY
Smallbore Standing	SWITZERLAND	FINLAND	SWEDEN
Free Rifle 3-Position	SWITZERLAND	SWEDEN	FINLAND
Army Rifle	SWITZERLAND	SWEDEN	NORWAY

There were six shooters on the United States Rifle Team.

1.	ARTHUR COOK	(USAF)	1 Gold, 2 Bronze
2.	ARTHUR JACKSON	(USAF)	3 Gold, 2 Bronze
3.	ROBERT SANDAGER	(CIV)	
4.	EMMET SWANSON	(CIV)	1 Gold, 2 Bronze
5.	AUGUST WESTERGAARD	(CIV)	1 Bronze
6.	VERLE WRIGHT	(CIV)	1 Gold, 1 Silver, 1 Bronze

1951 PAN AMERICAN GAMES - BUENOS AIRES, ARGENTINA

Individual Medals

	Gold	Silver	Bronze
English Match	USA (2)	ARGENTINA	ECUADOR
Smallbore 3-Position	USA (2)	USA (1)	ARGENTINA
Free Rifle	ARGENTINA	USA (2)	ARGENTINA
Army Rifle	ARGENTINA	ARGENTINA	ARGENTINA

Team Medals

	Gold	Silver	Bronze
English Match	ARGENTINA	PERU	BRAZIL
Smallbore 3-Position	ARGENTINA	CHILE	PERU
Free Rifle	ARGENTINA	MEXICO	CUBA
Army Rifle	ARGENTINA	PERU	CHILE

(The USA did not enter any of the team matches)

There were two shooters on the United States Rifle Team.

1.	ARTHUR COOK	(CIV)	1 Silver
2.	ARTHUR JACKSON	(CIV)	2 Gold, 1 Silver

1949 WORLD CHAMPIONSHIPS - BUENOS AIRES, ARGENTINA

Individual Medals

	Gold	Silver	Bronze
English Match	USA (2)	NORWAY	NORWAY
Smallbore 3-Position	FINLAND	USA (1)	NORWAY
Smallbore Prone	USA (1)	FINLAND	SWEDEN
Smallbore Kneeling	SWITZERLAND	SWITZERLAND	FINLAND
Smallbore Standing	FINLAND	NORWAY	SWEDEN
Free Rifle 3-Position	FINLAND	FINLAND	SWEDEN
Free Rifle Prone	SWITZERLAND	SWEDEN	SWITZERLAND
	Gold	**Silver**	**Bronze**
Free Rifle Kneeling	FINLAND	SWITZERLAND	SWITZERLAND
Free Rifle Standing	FINLAND	FINLAND	NORWAY
Army Rifle 3-Position	SWEDEN	SWEDEN	BRAZIL
Army Rifle Standing	ARGENTINA	FINLAND	SWITZERLAND

Team Medals

	Gold	Silver	Bronze
English Match	NORWAY	USA (1, 2, 3, 4, 5)	SWITZERLAND
Smallbore 3-Position	FINLAND	SWEDEN	NORWAY
Smallbore Prone	SWEDEN	FINLAND	USA (1, 2, 3, 4, 5)
Smallbore Kneeling	SWITZERLAND	FINLAND	SWEDEN
Smallbore Standing	FINLAND	NORWAY	SWEDEN
Free Rifle 3-Position	FINLAND	SWITZERLAND	SWEDEN
Army Rifle 3-Position	SWEDEN	YUGOSLAVIA	SWITZERLAND
Army Rifle Standing	SWEDEN	FINLAND	ARGENTINA

There were five shooters on the United States Rifle Team.

1.	ARTHUR COOK	(CIV)	1 Gold, 2 Silver, 1 Bronze
2.	ARTHUR JACKSON	(CIV)	1 Gold, 1 Silver, 1 Bronze
3.	ROBERT SANDAGER	(CIV)	1 Silver, 1 Bronze
4.	EMMET SWANSON	(CIV)	1 Silver, 1 Bronze
5.	AUGUST WESTERGAARD	(CIV)	1 Silver, 1 Bronze

1948 OLYMPICS - LONDON, ENGLAND

Individual Medals

	Gold	Silver	Bronze
English Match	USA (2)	USA (6)	SWEDEN
Free Rifle 3-Position	SWITZERLAND	FINLAND	NORWAY

There were six shooters on the United States Rifle Team.

1.	VAUGHN CAIL	(CIV)	
2.	ARTHUR COOK	(CIV)	1 Gold
3.	ARTHUR JACKSON	(CIV)	
4.	FRANK PARSONS	(CIV)	
5.	EMMET SWANSON	(CIV)	
6.	WALTER TOMSEN	(CIV)	1 Silver

ANNEX 2

THE SITTING POSITION

A. GENERAL. The sitting position is not used in ISU shooting, but is used extensively in NRA type events. Because the position is low and has a relatively large support area, it is stable and produces scores comparable to the prone position.

There are three major variations of the sitting position, and each of these has a number of minor variations.

B. THE CROSSED LEGS POSITION (Figure 82).

1. The shooter sits facing about 30 degrees to the right of the target with his legs crossed. The outside of each foot rests against the inside of the foot and ankle of the opposite leg. The shooter places the rifle to his shoulder and bends forward, placing his elbows on or near his knees. The weight of the rifle helps to pull the body forward. The elbows support the body. The sling prevents the forearm and rifle from falling forward. Generally, the sling must be placed high on the arm and must be fairly short. Slight changes in elevation can be made by crossing the right leg over the left, or the left over the right.

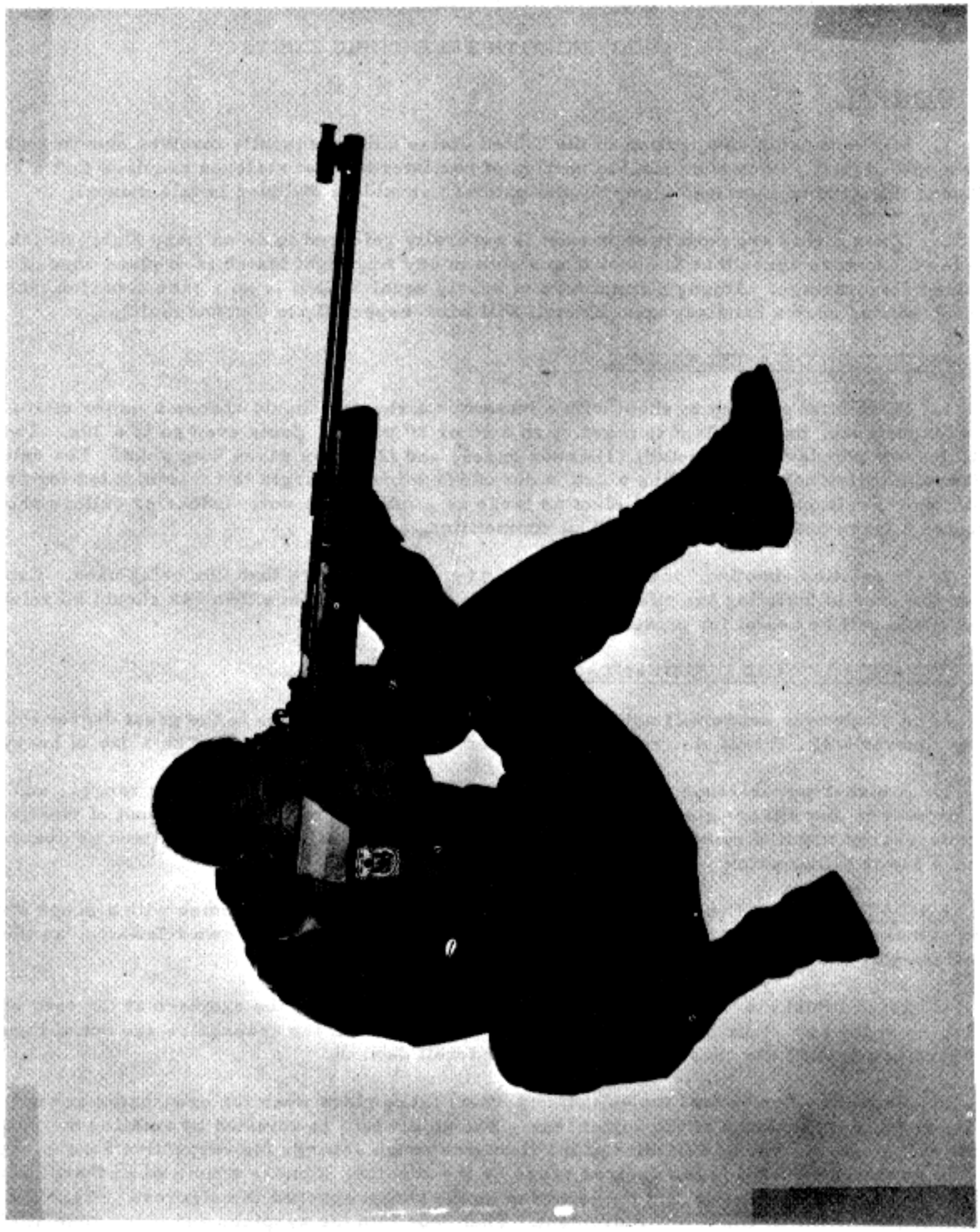
2. In this position, the rifle will almost always be below the head. The further the rifle is below the head, the more the head must be tilted down to the sights. Since the position is based on a large support area, tilting the head will not cause the body to sway. However, there are other considerations. Excessive head tilt causes the eye to look directly under the brow. This quickly fatigues the muscles that control the movement of the eyes. Therefore, the rifle should be kept as high as possible without disturbing the stability of the position. If the head must be tilted excessively, the shooter may minimize eye strain by shooting rapidly and finishing his string quickly.

C. THE CROSSED ANKLES POSITION (Figure 83). This position is similar to the crossed legs position, except that the ankles are crossed in front of the shooter. The shooter may face almost directly toward the target if he so desires. Slight changes in elevation can be made by crossing the left ankle over the right, or the right ankle over the left. Major changes in elevation can be made by moving the feet toward or away from the body. The toes of the boots may be crossed to help lock the legs in one position. The same considerations apply to head tilt in building the position.

D. THE OPEN LEGS POSITION (Figure 84). In this position, the shooter sits on the mat with his right foot to his right front, the left foot to his left front. The knees are several inches or more from the ground. The left elbow rests on or below the left knee, the right elbow rests on or above the right knee. This position is the least stable of the three variations, but some shooters cannot get into the other positions because of body conformation.

Figure 82. (Shooter L).

Figure 83. (Shooter J).



ANNEX 3

SHOOTING WITH TELESCOPIC SIGHTS

A. GENERAL.

1. Marksmanship competition in the United States quite frequently involves shooting with telescopic sights. Since such sizable portion of our international matches requires that a shooter be adept at this type of shooting, a few helpful pointers should be included in this manual.

2. Glass sights are permitted in what is generally referred to as an "Any Sight" match. Most top level shooters agree that to shoot iron sights in any Any Sight Match is to place oneself at a decided disadvantage. Among competitors of nearly equal skill it is on a rare occasion indeed that a person putting such a handicap upon himself will win--especially in a prone match.

B. SELECTION OF A TELESCOPE.

1. When first starting to shoot with a telescope a shooter should choose a power of 10, 12 or 14. With experience, he may elect to move up to a 16 or 20 power. Some even go to a 30x. Two types of reticles are popular with shooters (1) cross wires, and (2) cross wires with a dot. The selection is left to the individual. If selecting a dot, a dot of 1/4 minute of angle is recommended for prone shooting. Position shooters may select as large as a full minute dot. Indoor or gallery shooting will require a large dot as compared to 50 yd competition.

2. In position shooting, one will seldom find a scope of more than 20x being used. Especially when the wind is buffeting the rifle and shooter, a scope of not more than 14x should be selected. A lens shade will be useful for protection from rain and sun.

C. ADVANTAGES AND DISADVANTAGES.

1. A low power scope will not magnify the shooter's movements to the great degree that one of a larger power will. It will also enable the shooter to see the target clearer on a day of heavy mirage.

2. A higher power scope will permit easier spotting of the shots at longer ranges, and will enable the shooter to see mirage clearly. However, as the power increases, the amount of relative illumination decreases with the compared object lenses being of equal diameter. In a dark or overcast condition, a lower power scope will provide a brighter sight picture.

D. ADJUSTMENTS. Every scope user should read the manual that comes with a scope and learn how to make all adjustments correctly. Each shooter should focus his own telescope, as the eyes of shooters will vary considerably.

1. First adjust the "blackness" of the crosshairs by turning the eyepiece at the rear of the scope. Point the scope to a clear sky and screw the eyepiece out until the crosshairs are out of focus then turn the eyepiece in until the crosshairs are black and well defined.

2. Parallax is an optical maladjustment which takes place when the crosshairs are not focused in the exact plane of focus of the object lens. The object lens is adjusted by rotating the sleeve on the front of the scope. The graduations at the front are rough settings for respective ranges. A scope should be finely adjusted to the desired range by the shooter. Choose a time when there is little or no mirage. Focus the scope so that the lettering on the target appears the clearest. Place the scope on a sandbag so as not to cause any movement. Then look into the eyepiece and move your head left and right, and up and down, to see if the crosshairs or dot appear to move on the face of the target. Continue to adjust the sleeve until all of the parallax is gone.

3. Do not stare into the eyplece for more than a few seconds at a time during any adjusting processes.

4. When the correct settings are established for each range, they should be recorded in the shooter's diary. A complex problem can evolve when the data of two or three separate scopes is combined with multiple range settings and several rifles.

E. SCOPE MOUNTS. Scope blocks on a rifle should be set so that the distance between centers is 7.2 inches if the true value is desired of the 1/4 min. sight adjustments. Distance between blacks does not effect adjustments of internally adjusted scopes. Most scopes are adjustable for eye relief but some shooters elect to move the dovetail blocks to the rear to accommodate a kneeling or standing position. The dovetail blocks and scope mounts should always be checked before firing to insure that they are not loose.

F. CHEEKPIECE ON STOCK.

1. Normally a shooter will have the cheekpiece on his stock constructed so that when he puts the rifle to his shoulder and places his face naturally on the stock, his aiming eye will look straight through the sights.

2. When a telescope is mounted on a rifle that is stocked to shoot iron sights, the firer will notice at once that the cheekpiece is too low. The cheekpiece will need to be built-up. The reverse of this, of course, is true when switching to iron sights on a rifle that is stocked for telescopic sight shooting. There are two remedies to this problem.

a. One is to have two separate cheekpieces made for the stock.

b. The other is to have the sight mounts constructed so that the eyepieces of the iron and telescopic sights are at exactly the same plane.

G. SHOOTING.

1. The shooter should learn the correct direction to move his sight knobs for adjusting the strike of the bullet. He should know about how far one click will move him at each range.

2. In a match where sighting shots are unlimited (as is the case with most NRA matches) a shooter should not hesitate to fire a sighter when he is unsure about a change in conditions. He should also fire a sighter after taking a click on his sight knob. This is to insure that the sight did not stick or move too far.

3. Some good shooters claim they can hold the crosshairs on a bullet hole at 100 yards. Other very fine shooters say their hold is at best the size of the X-ring on an NRA 100 yard target. The movement will be easy to see. Many shooters "snap shoot" when they use a scope. That is, when the dot or crosshairs are on (or moving into) the area of desired impact, the finger applies immediate pressure to the trigger and fires the shot. Others will continue to shoot as they do with iron sights; hold the movement to a minimum and squeeze the trigger until the shot is fired.

4. Most shooters will verify that one must be able to favor or shade with telescopic sights. Especially when the wind is changing constantly, a shooter must be able to hold the crosshairs off to an area other than the center of the target. Do not hold outside the 10-ring. If time permits, you must adjust the telescope or wait for a desired wind condition to return.

H. TELESCOPE MOVEMENT WHILE SHOOTING.

1. There is a recoil spring on most target telescopes. This should be compressed and locked so that the scope will return to a constant location after recoil. If the spring is not used, another method should be devised to insure against movement of the tube.

2. In high power shooting, the spring is not tightened. The shooter must remember to pull the scope back to its proper setting before firing each shot.